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### Address.

#### THE PHYSICALLY DEFECTIVE.\*

By EDWARD O. OTIS, M.D., BOSTON.

WHETHER any of us are mentally perfect is a question, for as Tuke, the great English authority on mental diseases, remarks, it is to be assumed that the deity is sane, but whether anybody else is is a debatable question. At all events, most of us have some kind of a mental bias. Morally, we confess that we are all "miserable sinners"; physically, we are no less imperfect. "There is always somewhere a weakest spot." However, that "weakest spot" does not, with the majority of men, incapacitate them for a man's career in the world. It is only some marked and glaring physical deviation from what we call the normal that places one in the category of the physically defective, and this class is what we have to consider.

Mind and will always triumph over matter, and when the will power is intelligently directed and grimly determined, it will make a defective body do its bidding. Illustrations of this are innumerable, and all of us can doubtless recall examples in our own experience of success attained in spite of physical handicaps. Henry Fawcett became blind through an accident at the beginning of his career, yet later he became professor of political economy at Cambridge University, a writer upon the subject, a member of Parlia-

ment and postmaster-general of England. Huber, the blind naturalist, contributed to entomological science some new observations upon the habits of the bees. It was Milton's blindness which gave us that matchless poem, so sad and yet so triumphant:—

"When I consider how my light is spent  
Ere half my days in this dark world and wide,  
And that one talent which is death to hide  
Lodged with me useless. . . ."

The remarkable development of Helen Keller is familiar to us all. One of our own United States Senators is blind, and an eminent member of our own profession, who has added much to medical literature, has suffered from the same misfortune since youth. Even our friend Silas Wegg, with the handicap of his wooden leg, made the most of his opportunity and won temporary distinction as an educator of the credulous Mr. Boffin.

The men and women, however, who have achieved marked distinction in spite of acquired or congenital physical defects are the exception. Besides the will to succeed and an exceptional mind, they usually enjoyed exceptional opportunities for education. Not so with the great mass of the physically defective. Like the rest of us, they are of mediocre mental inheritance, and a large majority are without means of education, or opportunity of development, unless some assistance is rendered them. Such are the blind, the deaf and dumb, the crippled and deformed, and those suffering from various other physical handicaps. It is, indeed, bewildering, as well as depressing, to consider the vast numbers of this

\* Presented at the meeting of the American Academy of Medicine, at Detroit, June 10, 1916.

kind which the present war is producing at wholesale.

Granted that the physically defective are of sound mind, there is much to be hoped for in their care and education, as experience has shown; the "lame man may not leap as an hart, or the eyes of the blind be opened, or the ears of the deaf be unstopped, or the tongue of the dumb sing," but many, perhaps the most, can be expected to become self-supporting or more; they can be trained to employ the faculties that remain to the best advantage, and thus discount their handicaps.

The legitimate duty of the state is to provide for the welfare of its people,—all its people; and each state must decide in what way and how far it will and can do this. Two fundamental objects, however, are obviously the duty of every well-ordered state: first, to protect its citizens from palpable injurious influences, such, for example, as contagious diseases, impure food and drink, unwholesome conditions in factory and workshop, exploitation of child labor, etc.; hence the free distribution of diphtheria antitoxin, compulsory vaccination, milk and food inspection, the notification of contagious diseases, hospitals for consumptives, etc. Second, to afford its citizens an opportunity for development, a chance to realize that freedom, equality, and pursuit of happiness which are declared to be the birthright of us all in this country; hence the public schools and libraries, and other public educative measures. Furthermore, the public has, to a greater or less degree, taken upon itself the duty of caring for many of its unfortunates in mind or body, both for their own good and also to prevent them from being a source of injury to others, or from becoming dependents; hence the public hospitals and insane asylums, institutions for the feeble-minded, consumptive sanatoria, reformatories for the criminal class, schools or institutions for the crippled and deformed, the blind, and the deaf and dumb.

It is of the three latter classes of physical infirmities that I wish especially to speak, namely: (a) the crippled and deformed, (b) the blind, (c) and the deaf and dumb, for they constitute the major part of those whom we include under the physically defective and for whom legislation has done much, particularly for the blind and the deaf and dumb. For the crippled and deformed the states do not appear to have made equal or adequate provision, although this class probably largely outnumbers the other two classes. "It may be stated in general," says the Secretary of the State Board of Charities of Massachusetts, "that public care of crippled and deformed children, who are not necessarily public dependents, is the rare exception rather than the rule in social development." We still see, all too frequently, the maimed or crippled man selling lead pencils or shoe strings on the street corner, who, with an industrial education, might be setting type or cane-seating chairs and earn-

ing a steady and not a half-begging, precarious income. How much more inspiring is it to undertake the education of a crippled child with a sound mind than to expend the same amount upon a feeble-minded one, who can never be anything but a burden upon the community! How many crippled children and adults there are in the United States no one knows, for, unfortunately, no census of them has ever been taken. Dr. Orr of the Nebraska Orthopedic Hospital estimates the number as 259,000. Prof. Lange, quoted by Miss Reeves,\* stated in 1910 that the number of crippled children under fifteen years of age in Germany was 98,263. One hardly dares to imagine what the number of crippled and maimed adults now is in that unhappy country, which is so rapidly producing them. "If the number of crippled children in this country," says Miss Reeves, "bore the same proportion to the general population as in Germany, there would be about 133,000 crippled children under fourteen years of age, and at present only 4901 are cared for in the 37 existing institutions for them, public and private."

It is evident, then, that a not inconsiderable number of such children, indeed the greater number, are growing up illiterate and without training, owing to their inability to attend the common schools. It would appear to be a duty, as well as an economic measure, for the state to afford these defectives a common school and industrial education, and thus render them self-supporting members of society instead of a burden upon it. There are only five institutions for crippled and deformed children maintained entirely by state appropriations: one each in Massachusetts, New York and Nebraska, and two in Minnesota. Some of the other similar institutions receive public aid, but are controlled and administered by private boards. The "Massachusetts Hospital School" is the largest and most elaborate of its kind in America, and has a capacity for 250 children from five to fifteen years of age who are "mentally competent to attend the public schools." It was established in 1907 by a state appropriation of \$300,000, and the annual maintenance expense at the present time is \$80,000. Besides indicated surgical treatment, the children are given a common school and industrial training. As stated in the act establishing the school, "the purpose (of which) shall be the education and care of the crippled and deformed children of the Commonwealth." Industrial training is given in household arts, sewing, and handicrafts, such as basketry, printing, tailoring, cobbling, carpentry, etc. "The results achieved," says Miss Reeves, "through vocational training evolved from the daily life of a large institution, are most strikingly seen here and at the Widener Memorial School." This latter, the Widener School, is a residential institution, and is probably the most

\* "Care and Education of Crippled Children in the United States," by Edith Reeves, Russell Sage Foundation, N. Y., Survey Associates, etc., 1914.

perfect of its kind in the world, both in the perfection of its plant and in its large endowment of four million dollars.

The New York Hospital for Ruptured and Crippled is a similar institution of the highest development and efficiency, at which graded school work and vocational training are afforded for the deformed children, the City Board of Education paying a certain sum per year for each pupil.

Besides those mentioned above, there are some thirty other institutions of a more or less analogous character, principally established and supported by private charity. Some are called hospitals, some asylum homes, some convalescent hospitals or homes, and others schools; in most of them there is more or less educational work and vocational training.

The greatest need, Miss Reeves found in her investigation, was for children in rural communities, and the only institutions that were adequately meeting this need were the state institutions of Massachusetts, New York, Minnesota and Nebraska.

Besides the residential institutions for the crippled and deformed children, there are day schools, either private or public. In some of the larger cities, as in Chicago, New York, Cleveland and Detroit, special departments or classes are provided in the public schools for such children. The Boston Industrial School for Crippled and Deformed Children is a notable example of a highly-developed day school for such defectives. In this institution, which consists of one large building for general use, and I refer to it especially as it is in my own city and I am familiar with its work, there is a primary and grammar school department, similar to those of the public schools; and manual training adapted to those grades, including paper-folding, clay modeling, basket-making, sloyd, cane-seating, cobbling, needle-work, cooking, typesetting, and printing. Most of the pupils are conveyed to the school and returned to their homes daily, and all receive a substantial dinner at noon. There are also trade classes for those over fifteen years of age, and as soon as they become proficient these workers receive pay. Connected with this school is a modern outdoor schoolroom for those suffering from deformities of a tuberculous origin. Adjustable desks and special seats are provided, cots for rest periods and special gymnastic training are given. A nurse is constantly in attendance, who also visits the children at their homes. There is also medical, surgical and dental supervision and care.

It is evident that state legislation needs to do far more for this hopeful class of young defectives than yet has been done, for, as has been noted above, only about 5000 are at present cared for. Apparently the crippled and deformed do not seem to make quite the appeal to one's sympathies as do the blind or the deaf and dumb.

For the class of indigent adults who are phys-

ically defective from such diseases as arthritis, paralysis, cardiac disease, syphilis and other incapacitating conditions, the state almshouses or workhouses are the common public provision, and all states provide such accommodations, some better, some worse. Private charity also supplements the state provisions by various homes and hospitals, such, for example, as the great Robert B. Brigham Hospital for Incurables, in Boston, with a liberal endowment.

The loss of one of the senses, like that of sight or hearing, seems such an incomparably greater misfortune than to be crippled or deformed, that one's sympathy and pity are more strongly aroused towards this unfortunate class. To be forever shut out from the sight of all the objects of beauty and interest in the world, or never to hear the sound of a friend's voice or the Largo of a Handel is indeed an appealing misfortune, and hence it is that the public early expressed its sympathy in a practical form and began to make provision for the education and training of the blind and the deaf of school age, so that at the present time every state either has its own institutions for the education of those bereft of one or the other of these two senses, or else, as in the case of the smaller or sparsely populated states, makes arrangements for their education at public expense in neighboring states.

As the census report of 1910 upon "Benevolent Institutions" says: "There is probably no one class of persons for whose education and training such complete provision is made as for the blind and deaf." At the twelfth census, an investigation conducted by Dr. Alexander Graham Bell showed that there was a minimum of 64,763 blind persons in the United States, and of these somewhat over half were totally blind and 8000 were under twenty years of age. According to the report of the Commissioner of Education for 1908 there were forty state schools for the education of the blind, with 4340 pupils, and the census of 1910 shows 4720 in such institutions. The education of these children is not regarded as a charity, but as a part of the educational system, carried on at public expense. In 1879 Congress appropriated \$250,000 as a perpetual fund for the purchase of books and apparatus for the different state schools. Normal schools for the blind are also maintained in some states. The first school for the blind established in this country was a private enterprise, that of the Perkins Institute in Boston, founded in 1829 and rendered famous by its two great directors, Dr. Samuel Howe and Dr. Anagnos, and by the remarkable work of the former in the education of Laura Bridgman, who was deaf, dumb and blind. With infinite patience and devotion, Dr. Howe succeeded in unlocking the mind of this poor deaf mute until she became mentally alert, and developed into a well-educated woman.

Soon after the founding of the Perkins Insti-

tute, those at New York and Philadelphia were established in 1831 and 1833, respectively; and then, as the duty of the public towards these defectives began to be recognized, came the state institutions, which now exist in nearly every state.

The education given is at first similar to that of the ordinary common school, accompanied by manual training and gymnastics. Special training is also afforded in some handicraft, or for some professional or business occupation, according to the talent and ability of the pupil. Music and pianoforte tuning have been found peculiarly adapted to the blind, and some have attained eminence in the latter, as, for example, John Stanley, who was an organist at the age of eleven. The aim in the education of the blind is, first, to establish hope, the hope that in spite of their grievous handicap, they can attain a man's standing in the world, for hope stimulates endeavor; second, to give them a general common education; and third, a practical or technical education so that they may become self-supporting. It speaks well for the altruistic spirit, and as well for the economic sagacity of this country that it is so fully and liberally accomplishing this self-imposed task.

Culture and humanity are not necessarily close companions. We still seek philosophy from Plato and culture from ancient Roman literature; but it was a custom of both Greeks and Romans, to throw their deaf into the river and destroy their defectives,—a rather merciless eugenic method of ensuring a sturdy race. The deaf were regarded as being in the same class as idiots. Saint Augustine declared that the deaf could have no faith, since "faith comes by hearing only." A century ago even, the deaf were practically outside of human thought and activities, and for a long time were regarded as an exceptional class, like the peculiar silent folk Rip Van Winkle encountered in the mountain hollow. Various legal enactments were made indicating this attitude towards them, such as exemption from poll and other taxes; forbidding them from making wills, unless their intention was declared in writing; the appointment of guardians for them, etc. As time went on, however, and civilization advanced, it was found that these people of silence were mentally sound, and by education could be developed into rational beings.

At the beginning of the last century schools for the deaf began to be founded on the Continent and in England, and in 1816 Gallaudet established the first school for the deaf in America, at Hartford, called the Connecticut Asylum. At the present day, liberal state provision is made for the education of the deaf and the deaf and dumb, and after they have received their education they are regarded as are any other members of society, and are considered able to look after themselves. As wage earners they compare well with the average of the rest of the

population. According to the census of 1910 there were 43,812 deaf persons in the United States, 90% of whom became deaf before the twentieth year, and nearly three-fourths under five years of age. From three-fifths to two-thirds are caused by accident or disease, mostly from the latter, of which scarlet fever and meningitis are the most frequent causative factors.

In every state except New Hampshire, Nevada and Wyoming there are public institutions for the education of the deaf, and these three excepted states, on account of their small population, make provision at public expense for their deaf in other state schools. Some states have more than one such school. It can be said that every deaf child in the United States under twenty-one years of age is now given the opportunity of an education and afforded maintenance in a state institution. In a few of the Eastern states the institutions are in private hands but receive state assistance and are subject to public supervision. In ten states there are dual schools for the deaf and blind.

W. H. Addison of the Mosely Commission of England, who visited this country in 1907, testifies that "the care and instruction of the deaf seems everywhere to be regarded as one of the first duties of the state, and in the equipment of her schools for the deaf, America far surpasses Great Britain."

At the close of the year 1910 there were 10,543 inmates of deaf and dumb institutions, of which 5712 were able to speak, and 4831 were dumb. Of the whole number, 7054 were children, and of these 4172 were able to speak.

The two methods of teaching the deaf, as we know, are the sign and the oral methods, or a combination of the two. This education is not cheap, for it costs the state eight times as much to educate its deaf children as its hearing ones in the regular public schools, and four times as much in the day schools.

Besides the state institutional schools, in which about five-sixths of the deaf children are educated, there are day schools, which are a part of the public school system. These exist principally in the large cities, as in New York, Chicago, Boston and elsewhere. One of the first schools of this kind was the Horace Mann School, established in Boston in 1861. There are now in all sixty-five such schools. It has been found, however, that better results are obtained in the institutional or boarding schools, where the children reside continuously, than in the day schools.

In addition to all the states are doing for the deaf, Congress established at Washington in 1857 a college for the deaf and dumb, now united with the Gallaudet College and called the Columbia Institution. This is wholly supported by the Government.

A few of the aged and infirm deaf are found in the almshouses, but the total number is a little over 1%, thus showing that the great majority



of the deaf form a self-supporting part of the community and engage in almost all the various occupations and many of the professions.

Ancillary to the problem of the deaf and blind, is the medical examination of school children, by means of which these distressing defects in sight and hearing may, in some cases at least, be prevented; for by the early detection of infantile and infectious diseases, which are a prolific cause of deafness and blindness, and by timely treatment, such ultimate evils may be avoided. In Massachusetts the law requires the examination of the eyes and ears of the school children in all cities and towns of the state, the State Board of Education furnishing the test.

Another great class which may, I think, be included under the physically defectives are the tuberculous, although, of course, this incapacity is not always permanent, and the aim in the wide public provision made for them is not only treatment and care, but prevention. Quite every state has established one or more sanatoria for such sufferers and maintains them at public expense. The public appropriation for this purpose last year (1915) was \$14,500,000, and of this sum four states—New York, Pennsylvania, Illinois and Massachusetts—contributed over eight million dollars. Besides the sanatoria, special tuberculosis dispensaries are maintained by some states, as in Pennsylvania. In Massachusetts all cities of 10,000 inhabitants are required by law to establish and maintain such dispensaries. Municipalities, in many instances, maintain similar institutions under their boards of health, and likewise open-air schools or school rooms for the children with evidence of latent tuberculosis.

Besides sanatoria for supposedly curable cases of tuberculosis, consumptive hospitals for the incurables have also been established in some states, generally through local instrumentality, but with public supervision and state aid in maintenance. In Massachusetts the law requires all cities to establish such hospitals, and also towns when requested to do so by the State Board of Health. Municipalities have also taxed themselves to provide consumptive hospitals for their indigent incurables. Chicago, by the mill tax upon all taxable property of the city, has erected a great institution, which will provide for nearly a thousand patients. Boston has expended over a million dollars upon its Consumptive Hospital, and is constantly enlarging it. So of other cities. It is now proposed that by an act of Congress a special division of tuberculosis should be established in the United States Public Health Service, with an adequate appropriation, for the study and investigation of the tuberculosis problem. Thus it will be seen that legislation is actively engaged throughout the country in providing for its physically defective through tuberculosis.

Another incapacitating disease which in recent years has grown to large proportions is that

of the heart. For example, in New York in 1914 the deaths from heart disease increased from 74 to 169 per one hundred thousand, and other cities have had a similar experience. As with the child with latent tuberculosis, so with the child with slight or latent cardiac disease. Especial care in its education is equally necessary, and especial vocational training, so that it may learn an occupation adapted to its damaged heart. The wage-earner, likewise, with cardiac disease, would seem to deserve the same consideration as the tuberculous wage-earner. It would appear, therefore, that in the near future some public recognition and provision should be made for this class of defectives, if they continue to increase in the future as rapidly as in the past.

From the above it will be seen that the public in this country provides liberally for its blind, deaf and dumb, but very inadequately for its crippled and deformed, although the latter class outnumbers that of the two others combined. One cannot hope to make the lame man "leap as a hart," but by proper education his mind may be rendered alert, and by training the defective members made to do useful service.

## Original Articles.

### FRACTURES IN A BASE HOSPITAL.

By FREDERICK A. COLLIER, M.D., LOS ANGELES, CALIF.

(From the American Women's War Hospital, Paignton, England.)

THE American Women's War Hospital was opened in September, 1914, and in the course of 19 months from that time, till April 1, 1916, it has treated and discharged 2350 patients. It may be accepted as a typical base hospital, and the class of cases as typical of those cared for in all base hospitals, except a certain few of a specialized type. The cases treated are both medical and surgical; the total number of discharges comprised 836 medical cases and 1514 surgical cases, the large majority of the latter being wounded. Of this latter group, there have been 310 cases with fractures of one or more bones, or roughly, the cases with fractures comprised about one-fifth of all the surgical cases. A number of these cases presented more than one fracture problem, making a total of 327 fractures requiring treatment. In this list are included fractures of the skull, maxillae and ribs, solely with the idea of showing the proportion of fractures occurring in these bones as compared with those in the rest of the skeleton, and the treatment of them will not be considered in this

paper except in a most general way. Their proportion in the following classification, however, is not a true one, as more recently there have been established special hospitals for the treatment of these groups of cases, and any which come to a base hospital arrive only through some oversight on the part of the transportation authorities.

Of these 327 fractures, 40 were simple and 287 compound, the latter caused by a missile of warfare in every case. In Table I a detailed list of the bones involved is given, the arrangement showing fractural entities as they occur. If we include the small bones of the hands and feet, we find that there are 159 fractures in the upper extremity in 113 in the lower; excluding these, however, we find that the number of fractures in the long bones is nearly the same in the two extremities,—90 in the lower and 85 in the upper,—the larger number of injuries to the hands than to the feet causing the difference when the entire extremity is considered.

TABLE I.

	Compound.	Simple.	Total.
Skull .....	22		22
Spine .....	2		2
Maxillae .....	11		11
Ribs .....	7	5	12
Clavicle .....	2	1	3
Scapula .....	4		4
Scapula and Clavicle .....	3		3
Humerus .....	33	6	39
Humerus and Ulna .....	4		4
Ulna .....	17	1	18
Radius .....	12	5	17
Radius and Ulna .....	4	1	5
Radius and Carpals .....	2		2
Carpals .....	3		3
Metacarpals .....	28	2	30
Metacarpals and Phalanges .....	6		6
Phalanges (fingers) .....	33	2	35
Femur .....	27	1	28
Patella .....	2	1	3
Tibia .....	20	2	22
Fibula .....	10	5	15
Tibia and Fibula .....	17	5	22
Tarsal and Metatarsal .....	4		4
Tarsal .....	2	2	4
Metatarsal .....	9	1	10
Phalanges (toe) .....	3		3
	287	40	327

*Missiles.* The compound fractures were caused by the following projectiles: 152 bullets, 86 shell fragments, 23 shrapnel balls, 9 by grenades or bombs, and not determined in 17 cases. The bullet wounds were perforating in 143 cases, the bullet lodging in 9 cases. The shell wounds were perforating in 64 instances and non-perforating in 22 cases. The grenade and bomb wounds were non-perforating and were marked by the multiplicity of fragments, in one instance 170 pieces of bomb being removed. In two cases of fractured femur in which the bullet lodged, there was a fine disintegration of the bullet after impact; this was observed only in the cases mentioned. In most of the perforating shell wounds, although the large

fragments had perforated, there were many smaller fragments of steel remaining in the wound, and in the perforating wounds caused by shrapnel balls, the course of the ball could be traced by the spattering of lead. The comparative velocities of the various missiles may be shown in a relative way by the frequency with which they lodged, varying from about 6/10% in the bullet, 25% with shell fragments, and 36% with the shrapnel ball, to nearly 100% with grenades and bombs. All projectiles that had lodged were removed except two bullets; one of these had remained in the head of the femur, and it was thought best not to attempt its removal at the time, but we have since ascertained that he has had a persistent synovitis of the hip joint since leaving the hospital, enough to incapacitate him, and viewed in the light of this history it would have been wiser to have removed the bullet. The second case was one in which the bullet lodged in the muscles of the back after perforating the arm, and has given rise to no symptoms. In many cases small fragments of shell were left *in situ*, although the main piece was removed and the wounds healed in every case.

*Infection.* In the 287 compound fractures there were 44 in which healing took place without infection, and 243 cases with sepsis of varying grades present. Of those wounds remaining clean, 30 were caused by bullets, 13 by shell and 1 by shrapnel ball, all wounds being perforating. The clean bullet wounds were those caused in the zone of perforation and showed the characteristic small, punctured, sealed wounds of entrance and exit; the clean shell wounds were all caused by small bits of shell casing, apparently never larger than 1 cm. in diameter, and had sealed wounds of entrance and exit. The single wound from shrapnel ball, in which aseptic healing took place, occurred in the arm, the fracture being an oblique one of the humerus, the ball glancing from the bone, and the wounds of entrance and exit being small and sealed. Of the infected cases, 238 were pyogenic infections caused by the staphylococcus, streptococcus, in many cases of an attenuated variety, *B. pyocyaneus* and members of the colon group. In the majority of the pyogenic infections the sepsis was of a low-grade nature, with a tendency to become chronic, with indolent granulations and sinus formation. There were only 5 cases from which the *B. perfringens* was isolated, but a routine culturing of wounds has been done only during recent months, and undoubtedly there have been many wounds from which the gas bacillus could have been isolated, but only in the 5 cases mentioned have there been any clinical signs of the organism. All were cases with extensive lacerated wounds with much destruction of tissues; crepitation, marked swelling and typical thin dirty grayish pus were present. Amputation was necessary in one case, the others recovering after free in-



FIG. 1.—"Butterfly" fracture of humerus from shell fragment, one week old.



FIG. 2.—Same as FIG. 1 four weeks later. Union firm with small fragments of shell in callus.

cision and drainage. The small number of grave infections may be accounted for in part by the fact that the cases are not transported until all virulent sepsis has subsided, the man usually being kept in some of the general field hospitals till he is deemed fit to travel. In all cases we have made a careful record of the length of time intervening between the times of injury and first dressing, the dressing in the regimental aid post, and till treatment in some more permanent hospital, and up to certain limits we have been unable to discover any relation between the virulence or absence of sepsis and the time intervening between reception of injury and application of dressings. Up to 12 hours the records showed nothing, but with longer lapses than this before any dressing was applied, the sepsis seemed to be more virulent, and in a certain small number of cases which did not receive a dressing for two or three days there was a decided increase in the severity of infection. However, this may be partly, if not wholly, accounted for by the fact that these cases were usually exposed without food or covering, with an attendant marked lowering of the general resistance. About 40% of the cases received their first dressings within less than 5 minutes; about 40% from this time up to 3 hours, and the remaining 20% from 3 hours up to several days. Of course no elaborate deductions can be made from this small number of cases, but in this series we found that the degree

and amount of sepsis was dependent on the character of the wound, the conditions under which it was received, and on the missile causing it, rather than on the character of the first dressing or the time when it was applied.

*Character of Fractures.* There were 12 incomplete fractures of the long bones, 7 grooving, and 5 perforating. The perforating fractures were caused, 3 by bullets and 2 by fragments of shell, and all occurred in the expanded spongy portion of the bones, 2 in the lower end of the femur, 2 in the upper end of the tibia, and 1 in the lower end of the radius. The types of fracture were usually of the classical varieties described, and those seen most frequently will be briefly enumerated. The fractures of the long bones by bullets were roughly divisible into three groups, those caused by perforation at short ranges giving the so-called explosive effect with the production of very fine comminution, the fragments being driven in the direction of the lines of force and scattered in the tissues between the bone and the wound of exit; there was practically no splintering or fissuring and the effect was more localized than one would expect. This type resulted in several cases in non-union, with a pronounced gap between the bone ends. It is associated with extensive wounds of the soft parts, especially the wounds of exit, and when infected the bone fragments lie exposed at the bottom of this open septic wound, and unite only under these most adverse



FIG. 3.—Double fracture of humerus. The upper caused by bullet at close range, compound with comminution. The lower a closed oblique fracture at some distance.

circumstances. This type of wound is shown in Figs. 5 and 10. The second type is caused at longer ranges in the zone of perforation, the bullet causing a characteristic fracture with fissures radiating from the point of perforation and the size of the comminuted fragments governed by the angles of these fissures, giving the so-called "butterfly" fracture. Fig. 1 shows this type, while Fig. 12 shows the fissuring present in a perforation at still longer ranges; these usually show very little deformity and good alignment. A third type resulted from impact of the bullet at terminal ranges, in the zone of contusion, causing fractures by contact; these were marked by the large size and small number of the fragments, and in most cases were oblique fractures with practically no comminution. The shrapnel balls having a comparatively low velocity caused fracture varying between the last two mentioned types, the oblique or a simple form of the butterfly fracture predominating. In neither of these types did the bone experience any loss of substance, and most of the fragments retained their periosteum. The fractures due to shell fragments were of all types, varying with the size, shape, velocity and angle of impact. They varied from simple perforations without loss of continuity to badly comminuted fractures with much loss of bone substance, and were often accompanied by large lacerated wounds with marked destruction of soft parts. In general, the fractures by shell

were marked by less severe bony destruction and greater damage to soft parts, the fractures by bullets showing greater bony destruction and less severe lesions in the soft parts. There were three cases in which simple fracture at a distance, caused by indirect violence, accompanied the compound fracture caused by direct violence. Two were of the humerus, the first a finely comminuted fracture of the shaft adjacent to the neck with a simple slightly oblique fracture of the shaft at its middle, shown in Fig. 3; the second was similar except the direct fracture was of the drill variety and incomplete, close to the joint, while again the simple indirect fracture was about the middle of the shaft. The other was a simple oblique fracture of the femur through the shaft just above the condyles, accompanying a fracture of both bones of the leg in their middle third. There was no history of fall or other accompanying injury. The first two were caused by bullets and the last by a shell fragment.

*Treatment.* The average time elapsing between time of injury and entrance to hospital in all cases was 15 days, but this is not a fair general average because it was raised very much by two convoys coming from the Mediterranean forces, most of whom were wounded at least a month before entrance, and one of them had been wounded three months previous to arrival. Usually the cases reach us about 7 or 8 days af-



FIG. 4.—Contact fracture of tibia by shrapnel ball. Ball has split, one-half still in contact with bone. Typical symmetrical lines of fracture.



FIG. 5.—Bullet wounds of forearm inflicted at close range, in the explosive zone. Small wound of entrance and large wound of exit. Four days old.

ter the injury. If, however, there was any large number of casualties, they are brought to us much sooner, reaching the hospital 48 hours after being wounded; one convoy reached the hospital 24 hours after the engagement.

The treatment may be roughly divided into two phases,—that received before admission, which consists principally of the treatment of early complications, virulent infection, secondary hemorrhage and shock, with the fracture receiving secondary consideration; the second phase comprising that treatment received after arrival in a base hospital, where the fracture receives primary consideration and complications



FIG. 6.—Radiograph of forearm shown in FIG. 5 showing loss of substance in radius.



FIG. 7.—Fracture of humerus by a bullet in the explosive zone. *humerus* fine comminution which is sharply localized, a tendency toward formation of gap between bone ends and absence of fissuring.



FIG. 8.—Same as shown in FIG. 7. Three months later. Most of the fragments have been removed but union is taking place from those few remaining.





FIG. 9.—Wound of entrance caused by fragment of hand bomb perforating forearm.



FIG. 10.—Wound of exit in case shown in FIG. 9.



FIG. 11.—Radiograph of forearm of the case shown in FIGS. 9 and 10. Shows great loss of substance of ulna.

are treated as they arise. The soldier receives his first-aid dressing as soon as possible after being wounded; this formerly consisted of an aseptic dressing, but more recently most of them are antiseptic in character, of a larger dimension than before. A few moments later in the dressing station, he is given another dressing, the wound is painted with iodine, anti-tetanic serum is given and fixation applied to the fracture. He is then transported through the routine of field hospital, casualty clearing stations, and ambulance train, to a general stationary hospital. Complications are treated as they arise, while passing through any part of this routine, by drainage, ligation, opiates and dressings. A serious case may remain at any point when deemed advisable. At the stationary hospital more permanent fixation is applied, drainage established for sepsis, and the patient is given an opportunity to recuperate. When deemed fit to travel, that is, when virulent sepsis has abated and adequate fixation applied, he is transported to the base hospitals in England.

The patients are transported in a variety of splints, most of them being made of wood and of a simple pattern. Some of the most common are the Thomas splint for femurs; a modification of this is often used for the humerus, wooden right angles for fixation of the elbow and simple wooden splints with foot rest for the leg. If the wound is inadequately drained, or when there is reason to believe that it has been imperfectly cleaned, the case is immediately operated upon, adequate drainage made, all fragments of missiles and clothing removed, the fracture reduced, and some apparatus applied that will give adequate fixation and at the same time allow the necessary dressings to be done. Missiles are removed at this time if they are readily accessible, and if no uninfected tissue has to be opened up in order to gain access to them. A greater effort is made to find shell fragments and shrapnel balls at this time than bullets, as they undoubtedly carry in enough clothing to render them a focus of infection. If the missile is not removed at this operation, it is removed after the sepsis has partly cleaned up, provided it is causing trouble of any sort; if not, it is left alone, but, as our records show, it has been thought advisable to remove most of them sooner or later. The principal septic focus is usually located between the bone and the wound of exit, along which track the fragments of bone are scattered, and it is here the principal drainage is placed. As regards the treatment of bone fragments, we have become more and more conservative about their removal. Fine fragments, loose in the tissues and bearing no relation to the correct alignment of the bone, are removed. Larger loose fragments, from which the periosteum has been stripped, are also removed, but all other fragments, that have at least a partial periosteal covering and any muscular attachment, are pushed back into rela-

tionship with the line of the principal fragments. If any sharp spicules are present on fragments adjacent to vessels, they are cut away. Occasionally the small fragments may extrude themselves later or their removal becomes necessary, but in case after case, one may see callus formation greatly assisted by the proliferation from these small fragments of bone, and in several cases a pronounced gap was entirely filled in by bony growth from these small fragments, as is shown in Fig. 8. The viability of these fragments, of course, depends a great deal on the virulence of the infection, but that they will live and proliferate in the presence of a pronounced sepsis there is no doubt. In fact, it would seem that these severely comminuted fractures offer particularly favorable conditions for early and solid union, since it has been shown by McEwen that the osteogenetic power of bone varies inversely with its volume.

For drainage we have used rubber or gutta percha strips in all cases, using in addition a soft rubber tube of small caliber for irrigation and for instillations of hypochlorous acid after the method of Carrel and Dakin. All drains are shortened and removed as early as possible, as it was found their prolonged use favored the formation of sinuses. Prolonged drainage is seldom necessary if the original incisions are properly made.

Plaster has been our chief method of fixation, with large fenestra for drainage with steel



FIG. 12.—Incomplete fracture of lower end of femur by shell fragment. Shows asymmetrical arrangement of bone along walls of wound of exit.

arches incorporated in the cast to provide support over these points. It has been very satisfactory when good plaster has been obtainable and when a proper extension table is available, but lacking these and in inexperienced hands, other methods are advisable. We have been using a modified Balkan splint which is a suspension frame with extension applicable in all directions. It is adaptable for both arms and legs, the arms being suspended either without support or in abduction in a modified Thomas splint. The legs and thighs are slung by means of some anterior or posterior moulded splint and extension applied directly to the leg. The patient may move about in bed a certain amount, and dressings are very easily done as the limb is always accessible. For fractures with simple dressings the ordinary forms of apparatus are applicable with occasional slight modifications.

For the after-treatment of these septic fractures, we have used hypochlorous acid solution 1:200, and more recently hypertonic saline solution has been tried in a number of cases. Both methods have given very satisfactory results, and thus far we are unable to say which is preferable. Both solutions are used either as a constant irrigation in foul wounds with much necrotic tissue present or as hot dressings changed every two to three hours with intermittent irrigations; after the wound has been cleaned up, some simple form of dressing is used. In the wounds with large open areas secondary suture is done as soon as possible, not with the idea of closing over a septic bone focus, but to diminish to a minimum scar formation and disabling contractures.

Bone plates have been used in fourteen instances of compound fractures and with what



FIG. 12.—Fracture of tibia by bullet at long range, marked by absence of comminution, slight displacement and the tendency to formation of long fissures.

we consider good results in some cases. In the light of this experience with them we believe that there are a certain few septic open fractures in which the use of the bone plate is justifiable. They were applied only in those cases in which malposition was still present after all external methods of fixation had been tried. The plates were put in with the knowledge that they would have to be removed later and we believe the results were better in spite of the prolongation of the sepsis and the increased necrosis at site of the screws than could have been obtained by allowing union to take place in malposition with a corrective operation after sepsis had cleared up. The plates undoubtedly do retard or inhibit callus formation at their site, consequently they should be removed as soon as there is enough callus present to fix the bone ends in position, and should never be left till firm union occurs or till the plates are loosened or extruded. As one is working with bone of very low vitality, it is more necessary than ever to operate with a minimum of trauma. One of the cases proved most instructive, showing clearly the absence of regeneration around the bone plate. It was a case with a fracture of the lower end of the femur and an amputated leg. The femur had been plated, and later, after union had taken place, it was found necessary to do an amputation of the thigh because of contraction of the hamstring muscles interfering with the wearing of an artificial leg. The specimen obtained showed a firm symmetrical callus with firm union except at the site of the plate, and for 1 cm. on all sides there was a total absence of all callus, with devitalized bone present only at this point. There was non-union in one case of compound fracture of the lower end of the femur, to be mentioned in detail later.

Twenty amputations were done in the entire series, of which eight were performed in the field hospitals before entrance. They were: one of the arm for fractured humerus with severed brachial artery, one of the thigh for comminuted fracture of the lower end of the femur and septic knee, another of the thigh for fracture of both bones with a septic knee joint, three of the leg for infected shell or bomb wounds, with much loss of bone, one of the forearm for fractured both bones and severed arteries, and two fingers for mutilating wounds. There have been twelve done here,—eight fingers, two of the thigh, one for non-union with osteomyelitis, the other already mentioned for contracted muscles in a stump, one of the leg for fracture of the tarsal and metatarsal bones with toxic absorption, and one of the forearm for a fracture of both bones, with gas bacillus infection. All the six major amputations done in field hospitals were done by the circular no-flap method of Fitzmaurice Kelly, and in five of them reamputation was necessary because of osteomyelitis in the bone ends and retracted flaps. The simple fractures were all of the types usually seen, and their treatment



FIG. 14.—Fracture of humerus by a bullet with comparatively low velocity which has lodged in chest wall. The fracture is of the "butterfly" type with a slight rotation of the lower fragment.

did not differ from that ordinarily used. Three of them were bone-plated, the wounds remaining clean and the plates remaining in position.

**Complications.** The patients, with very few exceptions, were strong, healthy young men, and the ordinary medical complications were very rare; there was no pneumonia in the entire series, and syphilis was not suspected in a single case. Many of them presented multiple wounds of the soft parts of more or less severity, which, while seldom serious, complicated the application of apparatus.

Two cases of tetanus appeared, both in men with compound fracture of the leg. The first had an incubation period of two weeks in a man who had not had a prophylactic dose of serum. ran a mild course, was treated by intravenous and intrathecal injections of serum and recovered. The second was a case of the so-called latent tetanus appearing two months after injury. Seven weeks after being wounded he was given ether and the position of leg corrected; one week later tetanus of a mild character developed, reacted quickly to anti-tetanic serum given subcutaneously and made an uneventful recovery. (Reported by Dr. D. P. Penhallow in the *Lancet*, Feb. 26, 1916.) There has been one case developing erysipelas in the series.

**Necrosis.** As has been said, the treatment in many cases resolved itself into that of a fracture complicated by a localized necrosis, and it

is this complication that has proved one of the most difficult to deal with. There were two varieties of necrosis, the first being the necrosis resulting from the trauma of the injury giving rise to devitalized fragments, which when not removed at the preliminary operation later extruded themselves or had to be removed. This is the comparatively small price one pays for the conservative treatment of comminuted fragments already mentioned. The other variety of necrosis was due to infection acting on what at the time of the original operation was viable bone. Of the 243 cases with infected fractures, operation was found necessary for the removal of sequestra in 115 cases, or in nearly 50% of the cases, and often multiple operations were done for this purpose. They were done for the most part after the callus formation was well established, and a conservative plan was still followed, endeavoring to wait until the necrosed fragments had spontaneously separated from the sound bone, then removing them, with care not to traumatize any of the surrounding bone; the indiscriminate and vigorous curetting of these areas, often causing the formation of distressing cavities, very hard to close in, and infection of healthy bone. Often primary union was obtained after excision of the sinus, removal of the sequestra and sterilization of the cavity. In eight cases in which there was a fracture through the head of the humerus, excision was necessary in 6 cases, 2 with little comminution were reduced and union took place. The plan adopted in regard to the treatment of

the head was the same as that mentioned above, any loose pieces were removed immediately, and excision, complete or partial, done after it was seen that there had been established a line of demarcation between the dead and living bone. Of 4 wounds of the head and neck of the femur, excision was necessary in one case.

*Non-union and Delayed Union.* There were two cases of delayed union, one a simple fracture of the shaft of the humerus in good position in a healthy man. At the end of three months there was a very slight callus with no stiffening; blood was injected into the callus, and firm union was present 6 weeks later. Another was a transverse fracture of the proximal phalanx, caused by a knife; no union was present after eight weeks, so friction was made between the fragments, and union soon took place.

Seven cases with non-union occurred, one a case already mentioned in a middle-aged man with a transverse fracture in the lower third of the femur, with a foul discharging wound. He had been treated two months in a field hospital before entrance, and was very anemic, debilitated and somewhat toxic. Fresh drainage was provided, and for four months extension maintained the bone in good position, without any union resulting. A bone plate was then applied, and at the expiration of ten weeks, no union having resulted, an amputation was done, and absolutely no evidence of repair was found, due probably to the extensive osteomyelitis and necrosis in the bone ends. There were three cases somewhat similar in type, two of the radius and one of the ulna, in which there were long gaps between the fragments, varying from four to six inches in length. They were all the type of fracture caused by bullets at short ranges, with very large wounds of exit, so that the finely comminuted fragments were lying in the open septic wound, and in one case all bone fragments were removed by the surgeon. This type of wound, with the accompanying bone conditions, is shown in Figs. 5, 6, 9, 10, 11. These cases were discharged with this disabling deformity, but it is conceivable that a bone graft might be tried in such conditions, as has been done in the following cases. One, of the humerus, with a septic butterfly fracture of the lower end of the bone, in which all fragments were removed, leaving the typical pointed ends to the upper and lower fragments, with a gap intervening. (See Fig. 18.) It healed eventually, and after three months an inlay graft from the tibia was inserted, with a rapid regeneration of the graft and firm union. (See Fig. 19.) A similar procedure was done to a tibia with a gap of 1½ inches, and union resulted. The other case of non-union was a simple transverse fracture of the humerus that had been plated in very poor position before arrival here. No union existed and the plate was loose. The plate was removed, an inlay graft inserted and convalescence was uneventful. Before do-



FIG. 15.—Groove fracture of the lower end of femur by a shell fragment.



FIG. 16.—Perforated bullet wound of wrist with marked disorganization of joint.

ing any clean corrective operation on bone, we have waited till three months after the sepsis has disappeared, and although this may be excessive we have had infection occur, from what was undoubtedly latent sepsis, in operating before this length of time had elapsed.

**Secondary Hemorrhage.** This has occurred only three times in the series while cases were in the hospital,—two from perforating branches of the femoral artery and one from the palmar arch. From the records of other hospitals we were able to obtain information about three cases in which hemorrhage occurred before entrance, one from the brachial and two from the posterior tibial arteries. In one of the latter cases amputation was done. All others were controlled by packing and ligature.

**Nerve Lesions.** In only eight cases was there recorded any serious nerve injury. One of these, an injury to the brachial plexus with paralysis of the arm, followed a comminuted fracture of the outer end of the clavicle. A large bone fragment was found pressing on the plexus and removed, after which function gradually returned, and in two months' time was nearly normal. There were three musculo-spiral paralyses, all occurring with fractures in the lower third of the humerus. In two of these there was found complete division of the nerve, and suture was done in both cases, and in one case the nerve was found caught in the scar and freed. In two instances the external popliteal

nerve was caught in scar with attendant paralysis. Neurolysis was done in both cases. Two radial paralyses were present, one from a severed nerve which was sutured; the other recovered spontaneously during two months following the injury. The median nerve was divided at the wrist and was sutured. We are unable at this time to give a report on the results in these cases as they all left supervision before any definite conclusion could be reached.

**Fracture in Joints.** These were frequent, and were usually attended by disabling and disappointing results. There were 13 fractures into the shoulder joint, 3 closed, the latter recovering with good results. Ten were compound and infected. In 6 of these complete or partial excision of the head of the humerus was necessary, resulting in 2 flail joints and 4 ankylosed joints, and in the 4 remaining cases it was not necessary to remove the head, and a good result was obtained in one case with but slight limitation in abduction, while in the others there was pronounced limitation of motion in all directions. The elbow was involved in 10 fractures, 3 closed, of usual types, and with good function resulting. Seven were compound and septic, resulting in 5 complete ankyloses, and 2 with motion through about half the normal area. The wrist was involved 5 times, all infected, resulting in 3 complete ankyloses and one partial ankylosis and the other having only very slight limitation of motion. The hip joint was opened by septic fractures in 3 cases, 2 of which re-



FIG. 17.—Fracture through head of humerus with removal of portion of head. Shoulder ankylosed in this position resulting in a useful arm.



sulted in complete ankylosis, the other resulting in very slight limitation of motion but with persistent synovitis. There were 4 septic fractures involving the knee joint, resulting in one useful knee and 2 partial and 1 complete ankyloses. There were a number of simple fractures into the ankle of the customary types and 5 compound fractures, 4 of which resulted in nearly complete ankylosis and 1 with only slight limitation of motion.

**Contractions and Ankyloses.** As has been shown, the fractures into joints were followed by a large percentage of disabling ankyloses, but aside from the ankylosis following this type of injury there were those due to other causes. The two principal additional causes were sepsis in the periarticular tissues or in muscle groups and tendons with cicatricial contraction and immobilization of these structures, causing a consequent immobilization of the adjacent joint; second, prolonged immobilization in apparatus. In certain cases with perfect joint surfaces there would be an absolute fixation of the part in a flexed position, due to contracting scar tissue. These were usually cases that had been under treatment for long periods in field hospitals under unfavorable conditions, and their correction offered some most interesting and perplexing problems. The true ankylosis resulting from infected fractures into the joint presents an almost hopeless problem in a military hospital, where time is limited and patients pass out of supervision after leaving the hospital. An attempt has been made in this group of cases to ankylose the joint in the position most favorable for function. For the shoulders we have found the most useful shoulder, for a man who must do manual work, to result from an ankylosis at about 45° from the body, this giving the greatest range of scapular motion, the arm inclining slightly forward from the perpendicular. The flail joints, while of course not resulting from excisions of the classical type, but being done as circumstances permit, give poor functional results; the motions were of fair range but strength was lacking. They were more useful, however, than an ankylosis of the shoulder with the arm near the body, as unfortunately occurred in one case. The elbows were ankylosed at slightly less than a right angle, and the wrists in dorsiflexion. That group of disabilities resulting from contractions may be nearly obviated by the use of correct apparatus from the start. There is a noticeable tendency among inexperienced men doing military surgery to treat each case as two problems, the first of healing the wound without regard to function, and second to secure function if possible. The amount of contraction from the large wounds is deceptive, and always greater than anticipated. Very early massage, and when possible, early passive motion, is instituted on all fractures in an endeavor to minimize the number of ankyloses and contractions from prolonged immobilization.

**Results.** Although we have not been able to follow the cases after they leave the hospital, as this is manifestly impossible while the war is still in progress, yet we have been able to ascertain a certain number of facts concerning the end results. No one man or group of men is responsible for the results, the personnel of the staff having experienced frequent changes, and no one fixed policy of treatment has been pursued since the origin of the hospital; the results should then be a fair general average and comparable to any general military hospital, in which changes of the staff are frequent.

In general the following disposal of a case may be made. He may be sent to duty, in which case he must be able to resume active duty at the expiration of a short furlough, or he may be sent to a convalescent home, in which case he must be able to resume duty in a certain number of weeks and to require no more surgical procedures,—only simple dressings are done here,—and finally he may be invalided out of service if he is not fit for duty, in which case all wounds must be healed and no more surgical care required. A man may be invalided for a certain number of months and then return to the army, but this very rarely occurs. A man is never invalided until every effort has been made to secure the best possible function, as the pension given in general varies with the functional capacity of the individual. In speaking of results, we will have to base the computations on the total number of cases discharged and not the total number of fractures.

**Disposal.** There have been four deaths in the series, but these occurred in those specialized groups of fractures that we have only mentioned and not discussed. They were 3 fractures of the skull and 1 of the spine. There were no fatalities occurring in cases with fractures of the long bones. Of the remaining 306 cases, 137, or 44.2%, have returned directly to duty, 75, or 24.2%, have been sent to convalescent homes, to return to duty in a short space of time, and 94, or 30.1%, have been invalided from the service. Grouping the above, we find 68.4% returned eventually to the army and 30.1% were invalided from service. These figures would be somewhat lower if we excluded the fractures of the skull; as according to recent rulings, any man with a trephine opening in the skull is invalided, no matter what his functional capacity may be. The conditions present for which the men with fractures in the extremities were invalided were roughly grouped in Table 2.

TABLE II.

Nerve Paralysis	5
Ankylosis Shoulder (complete)	4
Ankylosis Shoulder (partial)	3
Flail Shoulder Joint	2
Ankylosis Elbow (complete)	5
Ankylosis Elbow (partial)	2
Ankylosis Wrist	4
Ankylosis Fingers	2
Ankylosis of Hip (complete)	3



FIG. 18.—Non union of fracture in lower end of humerus. Fracture from a bullet at short range, all bone fragments having been removed on account of sepsis.

Ankylosis of Knee (complete) .....	2
Ankylosis of Knee (partial) .....	5
Ankylosis of Ankle .....	4
Ankylosis of Foot .....	5
Shortening of Femur ( $\frac{1}{2}$ to $2\frac{1}{2}$ inches) ..	9
Non Union (loss of substance) .....	3
Amputations .....	11
Limited Motions from Scar .....	5
Miscellaneous (debility, etc.) .....	8

It is instructive to note that the majority of the cases were invalidated because of lesions affecting the joints, showing the necessity for careful orthopedic supervision, and is a small indication of the opportunities for orthopedic work in a hospital of this kind.

**Function.** In estimating the function at the time of discharge, we have taken the following approximate standard: Good function, to indicate that the individual will be able to resume duties in the army or in civil life, without any diminution in his efficiency. Thus some of the invalided men may be considered as having good function, although they might not at the time of leaving be unable to do a long march, and as a consequence would be invalidated.

Fair function, to mean a result that will enable a man to resume his usual manner of livelihood, with a somewhat decreased efficiency, but one who will not become an economic burden to the state.

By poor function we mean that the man is incapacitated for active work in civil life, and without some complicated apparatus, for example, an artificial leg, will have a reduced effi-



FIG. 19.—Same case as FIG. 18 three months after application of an inlay graft from tibia held in place with bone pegs.

ciency and will get a pension from the state for life.

Judging by the following standards, we find that there are 219 men with good functions, 46 with fair function, and 41 with poor function. This result is not markedly different from that given before when considering the disposal of the cases, but it shows what proportion will get pensions for life, and translates the results from military terms to those of civil life.

**Time in Hospital.** In order to get some idea how much longer these cases needed to be under supervision than cases in civil life, the length of time elapsing from the time of injury and the time of discharge from surgical supervision has been computed for each fracture, and a general average taken for each group. The averages thus obtained of course do not represent the time required for union, but show the length of time that each group of fractures required surgical supervision, and thus represents in a way the tax put upon the medical service of an army by injuries of this variety. These averages are given in Table 3.

This table also gives the number of cases in each group who were sent to duty; this includes those sent to convalescent camp who return very soon to duty, as explained, those invalided, and the deaths. The average time elapsing in each group from time of injury till discharged from surgical supervision is given, expressed in days. On cases with two or more fractures the case is placed under the group of the more im-

portant fracture, and the lesser fracture is not included. The totals are expressed in terms of individuals, and not of fractures, as was the case in Table I.

TABLE III.

	Duty	Invalid	Died	Time (Days)
Skull .....	7	12	3	68
Spine .....	1		1	30
Maxillae .....	10			79
Clavicle .....	2			96
Scapula, etc. ....	5	2		
Ribs .....	10	1		87
Humerus .....	23	16		79
Radius .....	9	11		80
Ulna .....	15	3		71
Radius and Ulna ...	3	1		75
Metacarpals .....	35	1		47
Carpals .....	1	2		60
Phalanges (fingers) ..	33	2		51
Femur .....	6	22		142
Patella .....	2	1		60
Tibia .....	15	5		102
Fibula .....	14			80
Tibia and Fibula ..	10	11		116
Tarsals .....	3	2		75
Metatarsals .....	6	2		70
Phalanges (toes) ...	2			63
	212	94	4	

I wish to express my thanks to the Executive Committee of the American Women's War Hospital and to the Chief Surgeon, Dr. D. P. Penhallow, for permission to use the records of the hospital, and to the other members of the Staff for their courtesy in allowing me to follow the progress of certain of these cases in their wards.

# SPECULATIONS REGARDING THE PANCREAS AND METABOLISM IN DIABETES.

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To the great mass of literature about diabetes it is almost presumptuous to add anything unless it be supported by all sorts of experimental and clinical evidence. The following ideas, however, though unsupported at this time by such evidence, are in the nature of a preliminary statement, and so I venture to present them if only for discussion and refutation.

It is certainly not over-stepping bounds to adopt the premise that diabetes mellitus is a disease of the pancreas. It is also true to say that in degree and severity it is most variable. The ordinary classification of von Noorden into mild, moderately severe and severe types is recognized as arbitrary since there are all gradations and they merge into each other.

We are all born with different heritages. Each organ in the body is destined to have a certain maximum functional "horse power."

By care in breeding and environmental conditions, functional capacities might be increased. Careless breeding and wrong environmental conditions, no doubt, diminish them.

The work of the pancreas, or of its internal secretion is almost as continuous as the heart beat, and only ceases entirely with death when all metabolic activity ceases. Almost all organs of the body are provided with great reserve power. One-half a lung if intact is enough to support life; one kidney is ample; the heart has five or six times as much reserve as it is called upon to exert under anything but the most severe and sudden strain. Experimentally, likewise, one-eighth of a pancreas or less is usually sufficient to prevent the onset of diabetes.

Undoubtedly we are all born with different pancreatic functional capacities varying in the same way that our mental capacities vary, and subject to change through heredity, overwork or disease. Some have less, some more reserve power; some people may have larger and better equipped islets or more of them, others smaller, poorer or fewer. Our pancreases are "geared" to a certain maximum metabolic activity and endurance.

It is wholly reasonable to suppose that in man as well as in experimental animals the functional capacity of the pancreas must be reduced between seven-eighths or nine-tenths before true diabetes ensues. The reduction of functional activity can be relative or absolute, functional or organic, and as varied in its causal relationships as failure of cardiac compensation. In other words the relation of functional capacity to total metabolism is a mathematical one. Supposing the normal figures are represented by 4/4ths pancreatic capacity, covering a metabolic activity of 60 kilos body weight: If the body weight is increased by 40 kilos, the total metabolism requirement would be increased and the functional capacity relatively reduced 66%. The amount of reserve power would determine its sufficiency. Failure of compensation would mean diabetes.

In obesity a very similar condition is present. Obesity may be a condition of abnormal metabolic function resulting in the abnormal storage of energy rather than in its normal combustion, and is closely related to diabetes. An enormous increase in body weight so increases the total metabolism, that the pancreas succumbs to the strain and diabetes ensues. Obesity is only one condition where total metabolism is increased and pancreatic function is disturbed. Fever and Graves' disease are often associated with glycosuria, and if diabetes is preëxistent, it is greatly aggravated, possibly by the greatly reduced relative functional capacity of the pancreas. Hence the fatality of infections in diabetes?

In an opposite way influences which reduce or retard metabolic activity benefit diabetes. It has been known for a long time that morphine

derivatives will drive out the last traces of sugar when only traces remain. May not this be due to a reduction of metabolic activity and a temporary establishment of pancreatic compensation?

The severity of diabetes follows a steadily declining curve as age increases. It is so mild in old age that for years the name diabetes has been denied these cases and glycosuria substituted. The curve of basal metabolism coincides exactly with the curve of severity of diabetes, being greatest in infancy and childhood and least in old age. The severity of a mild case of diabetes is at once increased by the incidence of any accident increasing basal metabolism (fever, infections, goitre). Glycosuria in old people is suddenly true diabetes in the presence of an infection.

The remarkable variations in sugar tolerance in the same diabetic individual has been suggested to argue the functional character of the disease. It does not necessarily follow, however. Severe organic disease in any organ is capable of the same variation of function under the sole influence of rest. Again we think of cardiac compensation. Surely the amount of almost perfect rest afforded by the Allen fasting treatment is ample means of restoring a considerable degree of tolerance, and it is noticeable that the more rapidly the carbohydrate tolerance has been broken down, generally, the more rapid its recovery; the slower, the more difficult. In one case we may be dealing with fatigue; in the other, exhaustion of an already weakened organ. Of course there are other factors which increase tolerance as well as rest,—factors which promote better combustion of energy, mental preoccupation and muscular activity. However, the remarkable success of the Allen fasting, I believe, is largely due to this element of relatively absolute rest. Rest is the *raison d'être* for almost all medical treatment of chronic metabolic disease. That variations in the diabetic condition point to the functional nature of the disease in large majorities of the cases is insupportable, since the most prolonged periods of rest and freedom from all signs of the disease have not resulted to date in many cases of authentic, complete and permanent restoration of pancreatic function; only a relative compensation of function which prevailed only so long as the amount of work was regulated to the power of the pancreas for that work.

The proof of theories must be left to the experimental worker. Theories are merely the results of deductive reasoning. However, some of the clinical facts which seem to support these views are these:

*Diabetes in obesity.* Cases are so frequent that individual case histories do not require citation. In every man's experience there have occurred typical cases like the following: A man of 275 pounds develops diabetes with acute symptoms: polyuria, polydipsia, loss of weight, perhaps acidosis. His case seems acute and

severe. After four to six months without treatment he may lose 100 pounds, and his diabetes seems to suffer an automatic remission. All the acute symptoms have disappeared. Nature has attempted a crude cure. By reducing bulk and total metabolism, an overstrained, weakened and insufficient pancreas has become relatively vastly more sufficient to its job. However, infection, which would immediately accelerate metabolism, would instantly cause exacerbation of all acute symptoms and render the case severe again.

It is equally interesting to observe the opposite in children. Among our cases are many children, who on first examination seemed mild cases without acidosis, and with relatively high carbohydrate tolerance. A typical example is case No. 876, a boy of six, who in 1912 weighed 45 pounds and had a sugar tolerance of 30 grams. He has been kept wholly sugar free, with rare accidents, and yet today, at the age of 9, he weighs 60 pounds and his tolerance is about 20 grams. His growth and metabolic requirements have increased over 30%, and his sugar tolerance has decreased a like percentage. This story might be reproduced many times in our series and seems to show that diabetes is a progressive disease in children, but closer analysis shows that it is really the child who is progressive, and not the pathological condition. The most painstaking pathological examinations have failed to reveal definite organic lesions. This probably argues an inborn insufficiency of the Islands of Langerhans functional or organic (numerical?). Pathological examination would not be complete unless size and number of islands were taken into account.

Von Noorden and others have drawn attention to the fact that familial diabetes tends to occur at earlier ages in consecutive generations. If the age of onset in the first instance was sixty-five, the inherited functional capacity would be relatively lower at an earlier age in the next generation because of the greater metabolic demands at this earlier age, and would thereby explain the observed phenomenon.

Provided these theories are sound, it would be possible to predict to a mathematical certainty the future course of carbohydrate tolerance in children with diabetes. Given the age, weight and carbohydrate tolerance, the expected normal rate of growth and increase of metabolic activity would proportionately decrease the carbohydrate tolerance till it became zero. Modern treatment offers hope for children never before conceived. Intercurrent infections are the pitfall.

It remains to be proven whether continuous successful management results in actual regeneration of power in the pancreas. The thyroid and liver are regenerative organs. The pancreas up to the present time has seemed not to belong to this group.

## Clinical Department.

### A REPORT OF THREE CASES OF TYPHUS FEVER.

By M. G. BEHLIN, M.D., DORCHESTER, MASS.

THE cases here reported occurred at the Boston City Hospital (Third Medical Service) during the writer's period of internship.

The fact that typhus fever is a rare disease in the United States seemed sufficient reason for reporting these cases.

CASE 1. H. K., a single man, aged 23, born in Russia; arrived in this country ten days previous to onset of present illness. His family history was not remarkable. He had typhoid fever ten years ago and was sick then for four weeks. His habits were good and he denied venereal disease.

He was admitted to the Third Medical Service, Boston City Hospital, May 14, 1914. The onset of his present illness was very acute, with severe headache, chills and fever. There was no cough or expectoration, no dyspnea or palpitation. The appetite was very poor. There was no vomiting or diarrhea. No pain in the abdomen or chest. Micturition was normal; urine concentrated and diminished in amount. He said that he had had several small nosebleeds in the past ten days. He was well developed and well nourished. Conscious and rational, but slightly stuporous; his temperature was 104° F. The pupils were equal, regular, and reacted promptly to light and distance. The teeth showed marked sordes, and there was slight pyorrhea. The tongue protruded in the median line, was tremulous and showed a moderately thick dry white coat. The throat was moderately congested. The neck was not rigid. There was no glandular enlargement. Heart: the area of dullness extended from 3 cm. to the right of the median line to 9.5 cm. to the left apex in fifth intercostal space, just inside the left nipple. Action rapid, regular, and sounds of good quality; P<sub>1</sub> > A<sub>1</sub>; no murmurs. Lungs were resonant and breathing normal. Abdomen was level, soft and tympanitic; no tenderness, masses or spasm elicited; the liver and spleen not made out. The knee jerks were present and active on both sides. The skin showed a subcuticular eruption, petechial in character, with occasional dried-up vesicles. The individual spots were from 1-3 mm. in diameter. This eruption was over the abdomen, chest and back; it was not present on the face or the extremities.

Urine examination negative.

White blood count, 6500.

Blood culture taken.

*Progress of Case.*—May 16. Rash is more intense and is now present on the arms and legs. Temperature and pulse remain high. Spots in most instances do not disappear with pressure; petechial in character. Widal reaction negative.

May 18.—Temperature remains high. Rash unchanged. There is marked stupor. Pulse rapid and weak. Slight cyanosis and dyspnea appeared. Slight cough appeared, and there were numerous moist râles in both bases. Cardiac stimulation was instituted.

May 20. Condition unchanged. Prostration is

marked and patient is in intense delirium. Widals persistently negative. Blood culture negative.

May 22. This afternoon, on the 17th day of the disease, the temperature dropped to normal, by crisis; the pulse and respiration also dropped. General condition is somewhat improved. Rash is fading. The patient shows marked emaciation. Subsequent to the last note the general condition improved so rapidly that the patient was able to sit up by June 10, and was discharged well on June 18, 1914.

I happened to meet the patient about three months ago, and he appeared to be enjoying good health, having gained ninety pounds since he left the hospital.

CASE 2. Sarah B., aged 34, admitted August 2, 1914; said to have been only ten days in this country. Her father and one brother died of cholera morbus. Her mother and three brothers are living and well. Her husband and three children are living and well. No miscarriages. No chronic diseases in the family. She is said to have had measles, varicella, scarlatina, and mumps when a child. Had typhoid fever at ten years; sick then for seven weeks. Catamenia began at 16 and has been normal since. Her habits were good.

Present illness began abruptly eight days ago, two days after her arrival in this country, with general malaise, followed, on the second day, by chills, fever, severe headache and vomiting. Some nosebleed. No cough or expectoration, no night sweats. No urinary or intestinal disturbances.

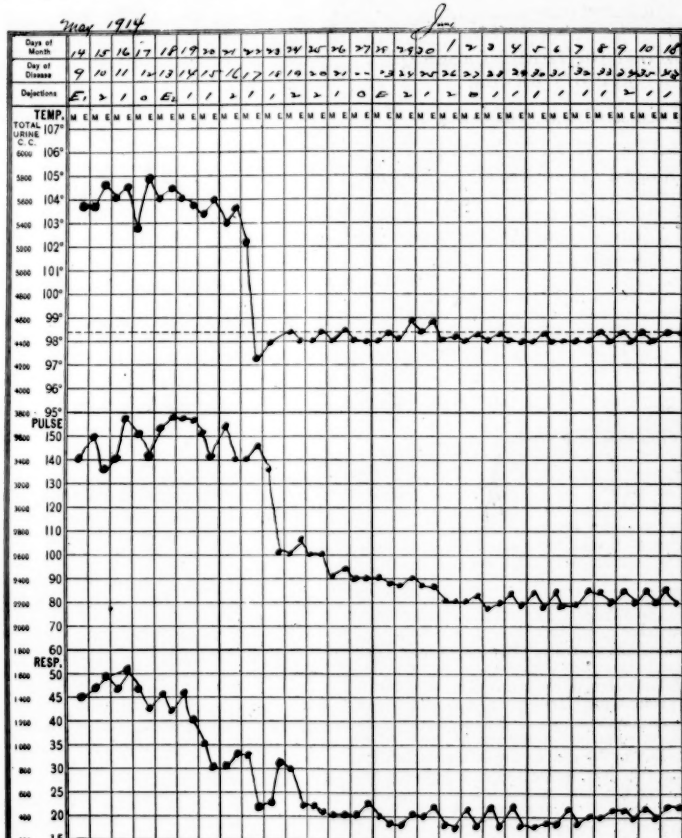
Physical examination showed a fairly well developed and well-nourished woman, markedly prostrated. The face was flushed. Pupils normal. Teeth poor. Tongue coated and tremulous. Throat was markedly inflamed; no exudate or membrane seen. Heart was normal. Lungs showed many medium moist râles, but there was no impaired resonance. The abdomen showed tenderness over the epigastrium and over the spleen. The liver was felt 2 cm. below the right costal border. The spleen was palpable. The skin over the abdomen, chest, arms and legs showed a fine subcuticular mottling, largely petechial.

*Progress of Case.* The temperature remained elevated for four days after admission, when it dropped to normal by crisis. The vomiting persisted for three days. Patient was only mildly delirious at times. Widals and blood cultures negative. Condition improved rapidly, so that patient was allowed to sit up on the 12th, and discharged well on the 15th day of August, 1914.

CASE 3. A. D., married man, 29 years of age. Clerk in a pawn shop. Admitted on July 25, 1915. Family history irrelevant. Past history: measles, mumps and scarlatina when a child. Pneumonia when at Rutland State Sanatorium four years ago. Had many attacks of hemoptysis seven years ago. In Rutland off and on since 1910. Discharged "improved" on May 1, 1913. His habits were good and he denied venereal disease.

Present illness began rather abruptly six days ago with chills, fever, and severe headache. Began to vomit three days ago and still continues to do so. Has also had generalized abdominal pain, colicky in character. Appetite poor and bowels costive. Sleeps poorly. No nosebleeds. No cough or expectoration. No night sweats. No pain in the chest.





CASE 1.

Physical examination revealed a well-developed and well-nourished man, conscious and rational, very restless and uncomfortable because of some abdominal pain. Lungs showed impaired resonance throughout, especially at both tops, front and back. Breathing was broncho-vesicular throughout—especially marked at both tops. No râles heard. No friction rubs made out. Abdomen was distended, soft and tympanitic; there were no masses, tenderness or spasm. Liver and spleen not made out. Extremities negative. Skin showed a fine macular eruption over chest and abdomen, resembling rose spots, but much more abundant, and did not disappear on pressure.

July 26. Patient markedly prostrated, temperature high, pulse rapid, vomits his food.

Urine, fever urine.

Wassermann on blood negative.

Blood culture negative for typhoid bacilli.

Sputum showed no tubercle bacilli.

Widal reaction negative.

July 27. Temperature rose to 104°F. this afternoon. Patient somewhat delirious. Rash persists. Widal again negative.

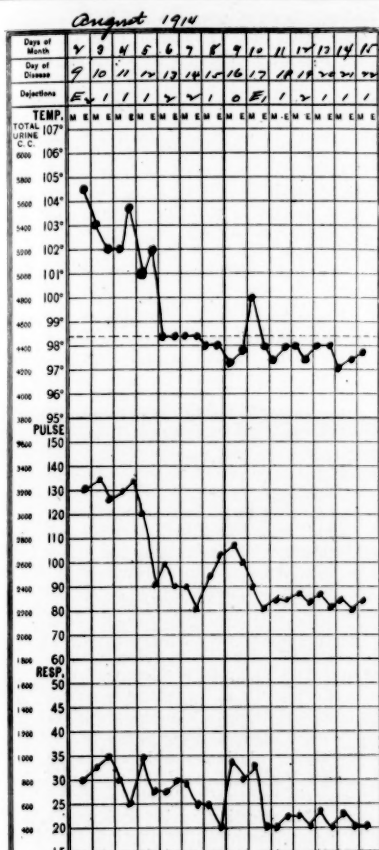
July 29. Temperature still elevated but patient looks a little brighter, says he feels somewhat better. Rash appears to begin to fade. Widal negative.

July 30. Temperature dropped to normal by crisis, early this morning, and patient looks much better. Rash fading decidedly.

Condition improved rapidly. Patient was allowed to sit up on the first of August and discharged well on August 4, 1915.

#### POINTS OF INTEREST.

1. The diagnosis in these cases was made on the suddenness of the onset, negative blood cultures and persistently negative Widal's, the early



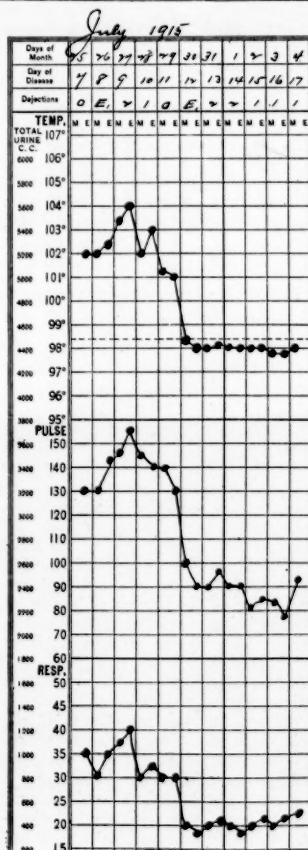
CASE 2.

mental symptoms and the early marked prostration; the distinctive subcuticular eruption and the termination by crisis. The diagnosis in all these was confirmed by Dr. Edwin H. Place, and, in the last case, also by Drs. Mahoney and Shea of the City Board of Health.

2. A very interesting point was brought out by Drs. Mahoney and Shea in the last case: the patient, who was a clerk in a pawn shop, was handling old clothes brought in by sailors, hence the great possibility of the source of infection.

3. The first two cases apparently contracted the disease on board ship, as they were both only a few days in this country when they took sick.

4. Patients were kept in the general wards and no cross infections occurred. The attendants, as well as the doctors and nurses, all



CASE 3.

escaped infection. This fact goes to show how much good hygiene and sanitation will do towards controlling a highly contagious disease like typhus fever—as has been so well demonstrated in the recent typhus epidemic in Serbia.

5. It is worthy of note that there were two male patients against one female, and that the latter had a comparatively mild attack,—facts well recognized in most cases reported.

6. It is remarkable that for years previous to this series there has been no case of typhus fever admitted to the Boston City Hospital, while these three cases appeared within the short period of fourteen months.

I desire herewith to express to the Visiting Physician of the Third Medical Service, Dr. John L. Ames, my grateful appreciation of the opportunity to record these cases.

## Medical Progress.

### REPORT ON DERMATOLOGY.

BY JOHN T. BOWEN, M.D., BOSTON.

- I. The Modern Treatment of Burns.
- II. X-ray Treatment of Scalp Ringworm.
- III. Trichloroacetic Acid in Dermatology.
- IV. New and Old Methods of Treatment.
- V. Scleroderma with Disease of the Thyroid.

#### THE MODERN TREATMENT OF BURNS.

DR. TARNOWSKY<sup>1</sup> bases his article on the experience obtained by treating several hundred electric burns, together with some experimental work, at the Cook County Hospital in Chicago. Theoretically every burn might be considered as a sterilized wound, but practically it must be treated as an infected one on account of the contamination that must have occurred before it is seen by the physician. The problem is, therefore, to remove infective material and avoid the destruction of cells that are still living. Hence there should be no vigorous scrubbing with brush and strong soap, no application of powerful antiseptics, such as bichloride or cyanide of mercury, picric acid and phenol solution, etc. In a burn of the first degree, the papillary layer of the corium is intact, and the tactile bulbs being scarcely affected, the pain is not severe. The deeper epidermal layers will rapidly replace the damaged cells above them, if the former cells are not destroyed by strong antiseptics or by scrubbing.

The writer's technic for a burn of the first degree is described. As a prophylactic measure, all those employed by the Northwestern Elevated Railway Company are told not to apply to a burn anything but vaseline, and then to cover the burnt area with gauze before sending the patient to the hospital. The area beyond the burn is first cleaned of all grease and dirt by a fresh sponge soaked in ether, and gently applied also to the burnt surface, which is covered with an ointment of equal parts of cold cream and zinc oxide ointment, to which 5% white precipitate of mercury has been added. A sterile gauze compress and bandage is placed over this, and unless there is severe pain or a rise in temperature, this dressing is not removed until peeling has taken place. Bullae should be opened only if they cause pain by their tension. A gauze mask, with holes for eyes, nose and mouth, is to be used as a dressing for the face. In the hospital the open-air treatment is to be preferred, screen cages being used for burns of the extremities. Stearate of zinc or bismuth powder is all the dressing that need be applied.

In burns of the second degree the pain may be intense and the whole surface of the epidermis destroyed, leaving the bleeding papillae and terminal nerve bulbs exposed. The question

arises whether the wound shall be left to heal by connective tissue formation alone, thus producing a scar, or whether grafts must be used to replace the burnt epithelial cells; and this question must be answered by the location of the burn and by cosmetic considerations. All second-grade burns of face, neck and hands, or feet, or when situated in the vicinity of joints, must be grafted. The relief of the pain caused by the exposure of the nerve-endings is obtained by some protective covering, such as amniotic grafts, plain vaseline, or the ammoniated mercury ointment described above.

The summary of the writer's experience is as follows:

1. Leave burns of the first degree to nature as far as possible.
2. In burns of the second degree, decide early whether to resort to skin grafting; if deemed necessary, apply the grafts as soon as shock has abated, even in the presence of pus.
3. The open-air treatment of burns of all degrees gives the best results.
4. If the open-air treatment is impossible to follow out, apply a bland non-adherent dressing, and leave it on as long as possible.
5. In all second and third degree burns, pain must be overcome by protecting the exposed tactile bulbs. Amniotic membrane, or a bland, non-irritating ointment will give the best results.

#### X-RAY TREATMENT OF SCALP RINGWORM.

Mackie and Remer<sup>2</sup> of Columbia University, who have previously published a technic for measuring the quality and quantity of the x-ray, with a discussion regarding the value of the pastilles of platino-cyanide of barium, publish in the *Medical Record* the results of their experience in treating scalp ringworm with the x-rays. This affection varies curiously according to the geographical distribution, the Mississippi Valley, for instance, being almost exempt from it, while in New York it is quite common and extremely obstinate. The older methods, as epilation and strong antiparasitides, they consider ineffective in the case of the poorer classes, chiefly because it is found to be impracticable to carry out the treatment. Hence the disease remains more or less active until puberty, when it disappears spontaneously. The disease being contagious, the children are kept from school, and their education consequently neglected.

The value of the x-ray in this affection depends chiefly on its capacity for making the hair fall out. It does not essentially destroy the parasitic growth, although it may perhaps modify the soil so that the growth is inhibited. The greater part of the parasitic growth comes away with the hair, and the rest disappears or is destroyed by anti-parasitic treatment. The x-rays are applied either in the divided dose, as generally practised in America, or in the mas-

sive dose as advocated and employed in Europe to a great extent. The writers consider the divided-dose method unscientific and antiquated, in the treatment of ringworm of the scalp, as there is no accurate measurement, and the whole scalp cannot be epilated without considerable danger. It was in 1904 that Sabouraud and Noiré called attention to the application of the intensive method of treatment in scalp ringworm, and since then the disease has been treated in this way in almost all of the European clinics with such good effect that it has been almost eradicated from some of the cities.

The method adopted by the writers is not claimed as original, but has been the result of the work of many investigators. The essential points in the technic, which aims at complete depilation at a single sitting, are thus enumerated:

1. Cut the hair short. Indicate with a skin pencil five points—A, B, C, D and E—on the scalp, which are exactly five inches apart, and draw lines between the various points.
2. Apply an epilating dose (H 1 at skin distance, B 9 or 10) to each of the five points. Apply protection only to the face, ears, and neck. The vertical rays are aimed directly at the point under treatment and each exposure must be at right angles to the other exposures.
3. Measure the quantity accurately with a reliable radiometer. The quality must be estimated by means of some reliable penetrometer, such as the Benoist instrument, together with indirect methods such as the milliamperemeter, ammeter, etc.
4. The head must not move very much during the exposure. Absolute immobility is desirable.

This intensive method of treating ringworm of the scalp is accurate and scientific, but on account of the delicate technic it can be employed only by trained radiotherapeutists. The hair falls out at the end of about three weeks, and begins to grow in again in about three months. No irritating substances must be applied to the scalp for two to three weeks previous to this epilation or for a month after, when a 5% ointment of sulphur or ammoniated mercury or other mild parasiticide may be used. A linen cap is to be worn by the child while the hair is falling, to prevent the infection of other children. Some irritation may appear on the scalp a week or two after this treatment, or there may be a transitory erythema. A bad result and permanent alopecia indicates an error in technic. Occasional relapses occur, making it necessary to depilate a second time, and in such cases a period of about six months should be allowed to elapse. No cases of idiosyncrasy have been observed. The x-ray treatment of scalp ringworm cannot, however, be said to be wholly without danger; but the writers declare that if properly conducted, it is the best means we have

at present of quickly curing the affection; and the same is to be said of favus.

(That this method of procedure is not necessary or superior to others in the treatment of the well-to-do classes is granted by the writers, at the start; and the element of danger that they concede at the close, while slight, should be taken into careful account. It is admitted by almost all observers that ringworm of the scalp varies greatly in its frequency, and also in its response to treatment in different localities. In New England, as illustrated by the patients who apply for treatment in Boston, this malady, among the better classes, does not belong in the category of the more obstinate skin affections. Careful attention to the hygiene of the whole scalp and head is most important during local treatment of areas of ringworm,—a point that has not been sufficiently emphasized. Daily soap washings and mild borated and antiseptic lotions should be ordered for the whole head. Epilation and the application of parasitocides to the affected areas, in addition to this, will bring about a cure in from three to four months in almost all cases when the treatment is rigorously followed, and care taken to prevent reinfection from any source. This is a period no longer than that claimed for the treatment by intensive x-ray exposure, and the method is wholly devoid of danger. The intensive x-ray treatment of ringworm in the vicinity of Boston should be limited to hospital practice among people who are unable or unwilling to carry out other methods systematically, and should always be confined to the hands of experienced radiologists. Reporter.)

#### TRICHLORACETIC ACID IN DERMATOLOGY.<sup>3</sup>

A paper was read, at the 39th annual meeting of the American Dermatological Society, on the uses of trichloroacetic acid in dermatology, by Dr. Charles N. Davis of Philadelphia. Dr. Davis was led to the use of this acid by the fact, pointed out to him by a laryngologist, that it caused a dry eschar when used as a cauterant on the mucous membrane of the mouth. Hence he concluded that a dry eschar on the skin would be of advantage in preventing the invasion of micro-organisms. He first used it with good results on patches of degenerative seborrhea and on pigmented moles. His method of procedure is to cleanse first the surface of the skin with benzine, to remove the oil, then to clean further with an alcohol pad. Then a saturated solution of the acid is applied to the area to be operated on with a piece of cotton twisted on a Japanese bamboo toothpick until the surface is white. Then a pad of cotton wet with water is applied to cause the acid to act more thoroughly on the tissues. Then the acid is neutralized with an alkaline solution, usually a 4 or 5% Labarraque solution. The cauterized area is then covered with an ichthylol varnish, 25% of ichthylol in a saturated solution of bor-

aeic acid, to which eight grains of tragacanth to the ounce is added. A small bit of teased-out cotton is then inserted, which in turn is painted with the ichthyol varnish. Usually there is no secondary infection, and the original dressing may be left on until the wound heals over.

This method of treatment has been found most efficient in pigmentations, papillomata, and naevi. In soft and flat warts, and in verruca senilis, the treatment with the acid is best preceded by the application of salicylic acid plaster to the area, this salicylic acid plaster to be covered in with a larger piece of ichthyol plaster, worn if possible for five or six days. Davis thinks that this is the ideal form of treatment in xanthoma palpebrarum. One painting is usually sufficient. The eyelid is put on the stretch to widen the patch, and to make sure that the edge is cauterized. It is afterward to be carefully dressed with the ichthyol varnish, without embedding the bit of cotton. The scar that follows is slightly depressed, but the eyelid folds back normally. Its action is excellent, also, in the so-called spider cancer, forming a thrombus. In the small, elevated, compressible naevi in children, Davis prefers the acid to carbon dioxide snow, as it is easy of application, causes little pain, and is not followed by inflammatory lesions. It is also very satisfactory in molluscum contagiosum. Usually one painting causes them to dry up and fall off in a few days. The small fibromata of the chest and neck are also treated in this way. He has had good results also in lupus erythematosus and in acne varioliformis. In beginning rodent ulcer and in small superficial epithelioma of the face, especially in the timid who refuse a radical excision, or in cases in which it seems wise not to reveal the nature of the trouble, Davis recommends removing the crusts, wearing a salicylic-diacetylon ointment for a few days and then dusting powdered cocaine on the raw surface. This causes anesthesia to curetting, after which cocaine is again dusted on, and the base cauterized for a sixteenth to an eighth of an inch outside of the border, and the wound then covered with ichthyol varnish. This he finds much more satisfactory than the old method of caustic potash and pyrogallol. Oftentimes these will heal without having to remove the original fixed ichthyol varnish dressing. Benign cystic epitheliomata have also been treated in this way. It has been found valuable also in fissures about the mucous orifices and in milium.

#### NEW AND OLD METHODS OF TREATMENT.

MacKee<sup>1</sup> read a very logical and sane paper to the Section of Pediatrics of the New York Academy of Medicine on January 13, 1916, on the subject of the modern treatment of skin diseases. He refers to the recent tendency to search for the causes of cutaneous disturbances in the internal secretions, gastro-intestinal troubles, fecal infection, etc., as marking a hopeful

outlook, although very little has as yet been added in the shape of practical results. He considers that research has added much to our knowledge of eczema. Sabouraud and Whitfield have shown that the so-called eczema between the toes and fingers, and also eczema marginatum of the groin and thighs, is of parasitic origin. Other researchers have thrown some light on the catarrhs of the skin following a local pyogenic infection, and on many occupational disorders.

In specific lines of therapeutics of the skin progress has not been very remarkable during the last year or two. MacKee speaks cautiously of vaccine therapeutics. He seems hopeful of the future of vaccine treatment of ringworm of the scalp, a method now under trial, but of which it is too early to predict results. The former successes reported from the vaccine treatment of acne vulgaris have not been substantiated. Polyvalent stock mixtures of the staphylococcus, if properly used, are of distinct value in pustular acne, but will not produce a cure unless combined with other methods. He thinks tuberculin treatment is specific for erythema induratum. The Kromayer lamp, which produces actinic and ultra violet rays, has been found at Fordyce's clinic in New York to be efficacious in many cases of acne vulgaris and alopecia areata, as well as in certain types of psoriasis, eczema, and lichen planus. In more serious and obstinate cases, such as lupus and naevi, when the ultra violet rays alone are indicated, MacKee has had no success with it.

With regard to radium, MacKee thinks that there is a decided misunderstanding as to the comparative value of this agent and of the x-rays. Radium has given excellent results in the treatment of deep-seated vascular naevi, but is not so effective in port-wine mark. It is superior to x-ray in leucoplakia and lupus erythematosus, and in inaccessible locations. The x-ray is indicated where extensive surfaces are to be treated.

With regard to auto-serum, his conclusions are that although it may have some results in the treatment of psoriasis, urticaria, and certain vesicular and bullous affections, its results do not, on the whole, warrant the time, trouble, and expense.

Refrigeration, by carbon dioxide snow, is considered to have stood the test of time, and to be one of our most valuable agents in the treatment of lupus erythematosus and of some naevi. It should never be used in the treatment of epithelioma.

MacKee rightly calls attention to the fact that we often lose sight of the value of the older methods of treatment. Trimble has recently reported cases of lupus erythematosus successfully treated by some of the older methods, such as quinine and the tincture of iodine. Davis has shown the superiority of trichloroacetic acid in certain affections, and the fact that keloid follows the use of this substance less frequently



than that of any other chemical caustic; and Sherwell has cured epitheliomata with acid nitrate of mercury where both x-ray and surgery have failed.

The best hope of progress lies in the combined efforts of the dermatologist and the internist, aided by the physiological chemist, the bacteriologist and the pathologist.

#### SCLERODERMA WITH DISEASE OF THE THYROID.<sup>3</sup>

Sequeira, of London, describes four cases of scleroderma associated with thyroid disease. In three of these cases Graves' disease was present, in one the scleroderma developed in a myxoedematous patient who was taking thyroid. These four cases were part of a series of twenty-two seen by the writer during recent years. The first case concerned a single woman of 22, who presented a sclerodermatous condition of the lower half of the left leg, the duration of which is not stated. Over this area an ulcer had developed secondarily, from an injury. There was also a small area of scleroderma on the inner side of the right leg. The thyroid gland was enlarged and prominent and there was marked tachycardia. The ulcer was gradually healed by means of stimulating applications. Two courses of thyroid extract, as has been recommended, had no effect on the scleroderma, or on the ulcer, and it seemed as if the general condition was made worse. X-ray applied to the enlarged thyroid had a definite effect on the general condition and may have contributed to the healing of the ulcer, but had no appreciable effect on the scleroderma.

The second case was also a woman of 22, who presented several areas of scleroderma in the chest and over the scapulae as well as on the hips. The patient was anemic, suffered from frequent headaches, had a quick pulse, protrusion of the eyeballs and an enlargement of the thyroid gland. The third case developed in a woman of 59, who showed patches of scleroderma on each leg, with tachycardia, proptosis, and protrusion of the thyroid gland. The fourth case was that of a woman of 42, who had had a scleroderma of both lower legs for about a year. She had been under treatment for myxoedema with thyroid extract for fifteen years. She showed a remarkable sensitiveness to the drug, which had kept the myxoedema under control.

Discussing the pathogenesis of this affection, Sequeira observes that it occurs in connection with such a variety of conditions that it is hard to believe that many of the causal relationships that have been claimed for it have a sure foundation. Theories of a lymphatic, infectious, and tropho-neurotic origin have been advanced in turn, the last named being the one that has been most popular. It has also been claimed to be the result of extensive endarteritis, and has occasionally been associated with Raynaud's disease. Its possible relationship, in some cases at least, with syphilis has been advanced, and posi-

tive Wassermann reactions have been recorded by a number of observers. The coexistence of scleroderma and affections of the thyroid has been noted by many writers. According to Roques, thyroid atrophy seems to be more common than hypertrophy. Yet Dittsheim found eight cases of scleroderma in seventeen cases of exophthalmic goitre. Treatment by means of the thyroid gland has not proved very satisfactory. Roques collected 67 cases in which this treatment had been employed, with the result of a cure in four, an improvement in 32, and no effect in 31. Sequeira agrees with Osler that thyroid extract has no specific action in scleroderma as it has in myxoedema. He could not find that the skin in any case became softened or regained its normal consistency. Addison's disease has sometimes been reported as coexisting with scleroderma, but Osler's caution that hyperpigmentation is very common in scleroderma should be emphasized.

The writer's own conclusions are that lymphatic obstruction as a cause may be excluded. The localized band variety may probably be considered with propriety a tropho-neurosis. While it is true that a certain proportion of the cases are associated with affections of the thyroid gland, there is nothing to warrant the assertion that alterations in the activity of the gland or of its secretions are actually the cause of the affection. The fact that both atrophy and hypertrophy of the thyroid accompany this condition makes one cautious in forming conclusions.

It is impossible to exclude changes in the character of the secretion.

#### REFERENCES.

- <sup>1</sup>Journal of Cutaneous Diseases, March, 1916.
- <sup>2</sup>The Medical Record, August 7, 1915.
- <sup>3</sup>The Journal of Cutaneous Diseases, October, 1915.
- <sup>4</sup>New York Medical Journal, March 4, 1916.
- <sup>5</sup>British Journal of Dermatology, January, March, 1916.

### Society Report.

#### THE NEW ENGLAND SOCIETY OF DERMATOLOGY AND SYPHILIS.

The third meeting of the Society was held at the Massachusetts General Hospital on January 27, 1916, with the president, Dr. Abner Post, in the chair.

The following cases were presented:

##### 1. BLASTOMYCOSIS.

Presented by Dr. C. J. WHITE.

Twenty-six years ago, a man, now sixty-four years of age, was sick in bed with fever, rash and sore throat for about five weeks. During this illness he first noticed a small "pimple" upon the dorsum of the left hand appearing in the scar of an extensive burn, which he had received two years previously. This lesion gradually enlarged and formed a shallow

ulcer. At the outset a similar lesion appeared just beneath the right lower eyelid which has enlarged and remained in a more or less active condition ever since. There was also a painful lesion on the left instep which healed, leaving a deep scar. The lesion on the left arm showed but little tendency to increase in size until two years ago, but since that time there has been a progressive enlargement of the original ulcer and several new ones have appeared both upon the arm and upon the fingers of the left hand. The patient states that the ulcers have always tended to heal centrally and extend peripherally. For many years the patient has taken large doses of KI, even up to gr. 480 a week.

Today, the man presents at the outer canthus of his right eye, involving both lids, a roughly symmetrical lesion, the size of a twenty-five cent piece, with sharp borders and red granulating base. On the left forearm, just above the wrist, is an irregular ulcer about the size of the palm of the hand, with dirty granulations and irregular bluish edges. Above this area are two dime-sized lesions with heaped-up, pearly crusts. Covering almost the entire left forearm is the scar of the burn received twenty-eight years ago. There is a small, irregular scar upon the left instep the size of a dime.

With applications of fuchsin ointment the ulcer upon the arm showed every indication of rapid healing. Ten days after admission fuchsin ointment being no longer available, balsam of Peru was substituted. Tissue was removed for diagnosis and under the microscope presented a typical picture of blastomycosis. Several smears of pus secured from the lesions since that time have contained numerous budding organisms.

## 2. NAEVUS VASCULARIS TREATED BY THE KROMAYER LAMP.

Presented by DR. E. L. OLIVER.

The patient was a young woman with a "port wine" mark covering a large portion of her right cheek. Various men had tried divers means of destruction, including CO<sub>2</sub> snow and radium. The artificial snow had proved ineffectual, while radium had diminished the color somewhat, but was proving a very slow method owing to the small available supply of the metal. Several exposures to the Kromayer lamp have produced results decidedly superior to those gained by previous methods, both in the bleaching of the color and in the size of the areas treated.

## 3. DERMATITIS HERPETIFORMIS.

Presented by DR. C. J. WHITE.

In January, 1915, an eruption of small vesicles appeared upon the right arm of a woman, age thirty-eight. At this time the patient was in poor general condition and consulted her local physician, who prescribed for anemia a medicine containing KI, gr. 15 t.i.d. Within a few hours after the ingestion of the first dose of this medicine, the lymph nodes of both sides of the neck became swollen and painful. This glandular reaction was followed at once by a diffuse vesicular eruption distributed over the region about the lower jaw, neck, and upper chest. During a period of two weeks following, the process spread in segmental crops of vesicles down the trunk and extremities, each crop lasting two or three days. The patient remained in bed during this period. Itching was persistent.

Treatment consisted of the application of a sulphur ointment together with the medicine mentioned above. In June a second eruption similar to the first appeared upon the trunk, but was mild in nature and persisted only a few days. From that time until the present attack, small groups of vesicles have been present somewhere on the body. About Thanksgiving time many new lesions appeared and the patient resumed the use of the medicine prescribed in January. Following this, a rapidly spreading generalized vesicular eruption broke out, and from that time until entrance to the hospital, Dec. 27, 1915, many new crops of vesicles have continued to appear.

The skin generally, with the exception of the face and abdomen, is covered with a papular eruption and shows many punctate and linear excoriations. The papules are discrete and confluent, many with umbilicated tops covered with thin sero-hemorrhagic crusts. Many of the lesions are arranged in a more or less crescentic manner. There are many shiny, erythematous areas resulting from former lesions. Moderate enlargement of the lymph nodes of both groins is present. The Wassermann test is negative.

During the patient's stay in the ward, many small groups of vesicles have appeared from time to time. The treatment has consisted of a non-acid diet, Fowler's solution and the local applications of a sulphur-zinc oxide-lard ointment.

## 4. DECEPTIVE TINEA TRICOPHYTINA (MICROSPORON AUDOUINI).

Presented by DR. F. S. BURNS.

Duration one year (2). Over the mid-occipital region, a little to the left of the median line, there is a rounded area, two inches in diameter, consisting of a good deal of dry, coarse, furfuraceous scaling, without apparent alopecia, and without any cutaneous alteration. Hairs removed from this area reveal profusion of small spores.

## 5. INHERITED SYPHILIS.

Presented by DR. C. MORTON SMITH.

The mother of the patient has a strongly positive Wassermann reaction, but no clinical signs of lues. Her infection occurred probably seven or eight years ago, as she had a stillbirth with macerated fetus at that time.

The patient was born at full term, apparently healthy, and is now six weeks old. Marked snuffles developed soon after birth and have persisted. A general syphilide appeared within a few days, maculo-papular in type, with vesicles and small bullae in the palms and soles. The child is poorly developed and nourished, and has thin hair over the temples and prominent veins. There are transverse fissures of the lips and cracks at the corners of the mouth. There is a general glandular enlargement, a purulent conjunctivitis and profuse nasal discharge, making breathing difficult at times. There are also mucous lesions about the anus.

## 6. LARGE-SPORED RINGWORM.

Presented by DR. C. J. WHITE.

The present eruption began one month ago, when there was noticed a discrete, circular lesion about the size of a twenty-five cent piece, showing a tendency toward scaling, which in a few days changed to a thick yellow crust. The patient applied iodine, but

the lesion steadily became larger in circumference and markedly raised above the level of skin surface. Ten days ago the man was seen by a local physician, who advised the daily cleansing of the lesion with  $H_2O_2$  and the application of a paste. There is no history of similar condition among his associates and no ringworm has been observed upon his cattle.

Physical examination is negative except for the local condition of the skin beneath the jaw, where there is a lesion three by five cm. raised about  $\frac{1}{2}$  cm. above the level of the skin, reddened, infiltrated and showing loss of most of the hairs of the beard and numerous infected follicles from which pus can be expressed. There is no reaction in the surrounding skin. Beneath the left jaw are two smaller lesions of a similar character. Under the microscope pus expressed from largest lesion shows many spores compatible with the megalosporon ectothrix ringworm.

#### 7. TUBERCULOSIS CUTIS WITH TUBERCULOSIS OF THE LARYNX.

Presented by DR. J. H. BLAISDELL.

A man, perhaps twenty-eight years of age, decidedly aphonic from tuberculosis of the larynx, asserts that the present condition of the skin has existed for two years. Today, over the metacarpophalangeal joint of the left forefinger is a circular area, the distal half of which is surrounded by a markedly elevated purple wall, which is not papular but uneven, merely an exaggeration of the central structure. The skin is infiltrated, dry, and cracking. The microscopical examination reveals the tuberculous structure of the lesion.

There is also practically complete obliteration of the opening from the naso-pharynx to the throat, apparently due to late destructive ulcerations and the formation of extensive scar tissue. The Wassermann test is strongly positive.

#### 8. LICHEN PLANUS OR SYPHILIS(?).

Presented by DR. J. H. BLAISDELL.

Six years ago a man, now forty-two years of age, had a lesion on his penis, which was followed in three months by sore throats, headaches and falling hair. Subsequent to anti-syphilitic treatment by a local physician the lesions disappeared and the patient has been without symptoms until last March, when the present eruption started on the legs. Today, the arms, thighs, and lower legs are involved. The eruption is papular, dull red to violaceous and on the locations on the legs there is distinct hypertrophy and scaling. No angular, flat-topped papules, however, can be noted in any instance. On the inner aspect of the lower left arm there is a three-inch annular lesion made up of fairly shiny papules with some superficial atrophy. On the shaft of the penis and on the scrotum there are three, irregular, dime-sized lesions, with bluish, raised periphery. The Wassermann test is negative.

#### 9. CONGENITAL SYPHILIS.

Presented by DR. C. MORTON SMITH.

A young man, nineteen years old, presents extensive scar tissue in the nose and throat. There is an opening between the mouth and nose which allows a certain amount of air through the nose by inhalation, but the patient cannot force any air outward through his nose. A probe cannot find any passage from the mouth to the nasopharynx.

There is a perfectly smooth mucous membrane extending from the hard palate down as far as one can see. Dr. A. Coolidge states that there is a combination of two processes present. One of the common processes is for the gummatous infiltration in the soft palate to break down and make a large opening from the mouth to the nose. That gives an exaggerated palate. Then there is another condition where the gummatous process starts in the posterior pharyngeal wall.

#### 10. LUPUS PERONIO.

Presented by DR. F. S. BURNS.

Miss K. H. was born in Ireland thirty years ago, and after coming to America developed the present skin affection. The patient's feet become cold in winter, but as yet do not present any lesions. Two years ago the right ear became involved and one year ago the hands. The lobule of the right ear and adjacent skin, for a distance of a half inch in all directions, is involved. The lesion consists of an atrophic cicatrix covered with fine, parchment-like scales and at the lower portion, at the junction with the cheek, the edge is slightly infiltrated, still more scaly and suggests lupus erythematosus. The backs of both hands and fingers, especially the latter, are involved. Both hands show a moderate degree of passive congestion, consistent with a mild pernio. In addition to the pernio there are distributed over the backs of all the fingers, except the ring fingers of both hands, areas of livid red congestion, elevated in most cases, either actively congestive and with vesicular edges or in varying stages of subsidence of the exudative element.

#### 11. CONGENITAL SYPHILIS.

Presented by DR. ABNER POST.

A case of considerable interest. There is a symmetrical synovitis of the knees. Symmetrical synovitis is fairly common in connection with hereditary disease of this sort. There is rather an exception in the character of the present patient because most of these cases present simply synovitis while the knees are not flexed. Here, however, the knees are flexed and appear to be enlarged. There is considerable heat and an inclination toward a peculiar shape, one joint being a little smaller than the other. There is a slight amount of fluid in the ankle, though very slight.

#### 12. PSORIASIS OF THE PALMS.

Presented by DR. J. H. BLAISDELL.

A woman, aged forty-five, has six children living and three children dead. The present condition of the hands began one year ago with great itching, and has continued despite treatment. Today the whole palm is covered with a rather moist coating of tiny yellow scales. The lesions extend around onto the back of the hands, where there is, beyond the scaling, a quarter-inch band of dull red infiltration, sharply delineated. On several knuckles there are curious islands of the same dull red infiltration with some puckering and some nacreous scaling. There is one small silvery-scaling papule on the elbow. The Wassermann test is negative.

#### 13. ERYTHEMA INDURATUM SCROFULOSORUM.

Presented by DR. F. S. BURNS.

On December 15, 1915, Miss R. G., aged twenty-five, was admitted to the Skin Ward of the Massa-

chusetts General Hospital. For eighteen months she had noted deep lumps in the back of the right lower leg. A doctor had prescribed KI. without any improvement and had incised previous similar lesions. At entrance there were three red, hard, tender nodules deep in the skin, besides the scars of the older lesions. The active lesions were thoroughly curetted under ether and the patient was discharged on January 1, 1916. Examination on January 27 revealed the process completely healed and soundly cicatrized.

#### 14. DERMATITIS HERPETIFORMIS.

Presented by DR. C. J. WHITE.

Patient, aged nine, was admitted to the Skin Ward of the Massachusetts General Hospital, November 13, 1915. Nothing remarkable was discovered in his family or past history. The patient gives a very indefinite history of skin trouble at intervals for two years, but during the past summer the skin is said to have been free from eruption of any sort. Beginning in October, the present eruption appeared, and is generalized over the entire body, even in the scalp and on the soles of the feet. It consists of diffusely distributed, erythematous-vesicular rings, varying in size, discrete and confluent, and forming extensive gyrate configurations. Sparsely distributed are crusted areas, probably the site of vesicles, some of which have become infected.

At several different periods since admission the skin has cleared up generally, with the exception of a few vesicular lesions, which appear from day to day. These quiescent periods have been followed by new eruptions diffusely spread over the skin surfaces.

Nov. 13, W.C., 13,400; Polys., 68%; Lymph., 28%; Eosin., 4%; Hb., 76%.

Jan. 20, W.C., 7600; Polys., 43.5%; Lymph., 42%; Eosin., 4%; Hb., 75%; Trans., 10%.

#### 15. HIDRADENITIS DESTRUENS SUPPURATIVA.

Presented by DR. C. MORTON SMITH.

Mrs. X., aged twenty-three years, first noticed trouble with her skin when she was eleven or twelve years old. The eruption comes only during the winter months, and has recurred every winter, save one, since the beginning. Many scars of previous lesions are to be found on the feet and lower legs, and a few on the hands. At present there are fifteen to twenty-five active lesions, limited to the feet and legs, and these consist of pinhead-sized, acuminate, pus-topped papules, which leave behind them practically always a smooth, depressed, pit-like scar, resembling closely the scar of acne necrotica.

The general condition of the patient is slightly, if at all, impaired, but her feet are always cold and moist. There is little pain, but much soreness in the lesions, and those going on to pus-formation throb and ache.

Bioopsy by DR. C. J. White four or five years ago showed the condition to be hidradenitis destruens suppurativa,—a process, pathologically tuberculous, involving the sweat glands.

#### 16. DERMATITIS EXFOLIATIVA.

Presented by DR. C. J. WHITE.

In July, 1914, the patient, a woman of sixty, noticed an extensive seborrheal (?) condition of the

scalp. In September the skin of the palms of both hands became thickened and exhibited a tendency to fissure and itch. Within a few days the skin over the anterior portions of the chest began to scale, and gradually the process became a universal one. At times the skin showed a tendency to clear up, but relapses always followed. She was treated by a local physician, who prescribed ointment applications with little result. Since onset the condition has never wholly cleared up.

On admittance to the hospital, Feb. 17, 1915, the scalp showed rather well-marked alopecia, and was covered with dirty, greasy-white scales. Upon the face were symmetrical areas of clear skin, that is, above the inner half of each eye and upon the bridge of the nose. Elsewhere the skin was reddened and scaling. The hands showed thick scaling with fissuring of the skin, especially the left. Upon the arms, shoulders, middle of the back and lower legs, the skin was generally erythematous and scaling profusely, particularly upon the legs, which were covered with large scaling plaques. The soles of the feet presented heavy crusting and marked fissuring.

During her entire stay in the hospital exfoliation of the skin continued, with but slight tendency to clear up. At discharge, the patient's general condition was much better than at entrance.

Since leaving hospital in May the patient has applied various remedies to her skin with little change in her condition. She entered the hospital again in August, 1915, and at that time the skin over the entire body, including the scalp, presented a marked erythema, with thickening, dryness and profuse desquamation. The scales varied from small papery scales to large thick plaques. The process was particularly evident over both lower legs, and the folds of the skin in the popliteal spaces showed much fissuring. There was slight ectropion of both lower lids and the conjunctivae were injected.

On re-entrance, treatment with starch baths, t.i.d. and zinc oxide starch powder was begun and followed by some tendency toward improvement in the skin condition. On Oct. 1 all previous treatment was omitted, and the so-called dry treatment, with borated talcum powder and nothing else, was instituted. Under this régime the patient showed steady improvement, until the entire body, save the scalp, was free from scales. To hasten the cleansing of this region, an ointment was applied, contrary to my best judgment, and very shortly the whole disease, in its most aggravated moist form, was back upon us, and for a few days in November the patient's condition became so serious that she was placed upon the "dangerous list." With resumption of the dry treatment, the patient slowly, but only partly, regained her former condition. On April 14, 1916, the skin of most of the body is red and somewhat scaly, but in June the patient reported herself wholly recovered.

On entrance, W.C., 7800; Hb., 60%; Polys., 66%; Monos., 26%; Eosin., 8%; Transit., 6%.

January 27, W.C., 10,800; Hb., 65%; Polys., 52%; Monos., 34%; Eosin., 12%; Transit., 2%.

#### 17. EPITHELIOMA(?)

Presented by DR. BOARDMAN.

The patient is a man sixty-seven years of age, who began to have trouble with his leg forty-seven years ago. An ulceration developed on the front of

the leg, gradually worked around, but finally healed under various forms of treatment, and remained well until two years ago, when it broke down again. At present there is an area on the back of the leg which at no time has shown any ulceration, but has been covered with cheesy, necrotic material, which, if left alone, grows about an inch thick. If this material is removed one finds a fungating appearance underneath. The patient has refused to have a biopsy made.

Dr. Boardman believes that the disease is an epithelioma which developed from a nevus, which ulcerated and then changed over into an epithelioma. Amputation has been advised but refused.

#### 18. THE NEW TREATMENT OF PSORIASIS BY A NON-CARBOHYDRATE DIET.

Presented by DR. L. J. CUMMINS.

The patients were placed in the ward and at first given starvation diet with whiskey and water every two hours for the first two days. It was astonishing how the patients stood this starvation. Later we began the treatment without the starvation diet. We began with carbohydrates, twenty grams for three days, then increased to thirty, kept on that three or four days, and then worked up to forty. When the psoriatics did not respond as quickly, we restricted the amount to twenty grams.

The patient presented has been in the ward for four weeks. At entrance she was almost completely covered with heavily scaling lesions. The scaling has quickly diminished and the remaining large erythematous plaques are breaking up very rapidly, while the infiltration has lessened. All the patients who have been under our care in the ward have done very well. We have had over eighty cases in the Out-Patient Department who have all been given a diabetic diet, and those who have followed the diet have responded very well. When starch and carbohydrates are reduced the expense of food diet is practically doubled.

Dr. TOWLE: What has been done in other respects? How about other food substances?

Dr. CUMMINS: Proteids, between fifty to one hundred grams. Fats, between 100 to 200, bringing the calories up to between two to three hundred.

Dr. OLIVER: How much weight have these patients lost?

Dr. CUMMINS: Between four and ten pounds during their stay in the ward. The patients who started on starvation diet cleared up more quickly than those put on the limited diet. There has been no external or internal medication.

#### 19. THE TREATMENT OF ACNE ROSACEA BY ROENTGENIZATION.

Presented by DR. L. J. CUMMINS.

We have had eight cases in our series, which we have been treating by x-ray exposure to the thyroid. Patients were from twenty-five to thirty-five years of age. The first patient had distinct hyperthyroidism and was sent to x-ray for treatment. After the first x-ray exposure rosacea was markedly less. Since then I have been observing cases and sending them to x-ray for treatment. They all had shortness of breath on exertion, fine tremor, rapid pulse and were highly nervous. The interval between exposures has been from two to three weeks, so that only one has had three treatments.

The subjective symptoms of itching and burning

have ceased after the first exposure, and we have seen improvement in all cases so far, but have not followed these exposures long enough to note any cures.

Dr. TOWLE: Do you expose the nose or cheeks?

Dr. CUMMINS: The radiations have been limited to the region of the thyroid gland.

CHARLES J. WHITE, *Secretary*.

### Book Reviews.

*Changes in the Food Supply and Their Relation To Nutrition.* By LAFAYETTE B. MENDEL, Professor of Physiological Chemistry in the Sheffield Scientific School. New Haven: Yale University Press. 1916.

This monograph is an essay written for the meeting of the Second Pan-American Scientific Congress in Washington, in December, 1915. The author points out that the three fundamental conditions of modern civilization are food supply, sources of mechanical energy or power, and methods of transportation. The purpose of his essay is to show the effect which modern preservatives and transportation facilities have had on the food supply and on the possibilities of nutrition of civilized mankind. The fact that well-to-do communities have the resources of practically the entire world at their command at all seasons of the year, not only has an extensive economic effect, but upon the dietetic changes that result may depend important biologic evolutionary alterations. Dr. Bryant and others have recently pointed out the variations in physical form which may be determined or at least largely influenced by dietetic conditions. Perhaps the most interesting and timely portion of this work is that referring to food conditions as at present prevailing in the central European empires during the blockade to which they are subjected as a result of the war. The author comments particularly on the scientific acumen of the German nation in its public propaganda to meet the situation thus created. Especial reference is made to the German literature which has already arisen on this subject, to which the principal contributors are Drs. Eltzbacher, Oppenheimer, Rubner and Zuntz. The volume is of distinct value as a contribution to the study of modern dietetics and economics.

*A Purin Free Dietary.* By EDNA ALICE WAITE AND ROBERT ELSWORTH PECK, M.D. Woodmont, Conn. 1916.

This manual consists of a purin free diet list, a series of sample menus and a collection of recipes for making the dishes prescribed in a purin free diet. It should be of interest and value to dietitians and a convenience to physicians dealing with cases requiring such treatment.



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## ELECTRIC DELINEATION OF VISCERA.

In the issue of the *British Medical Journal* for September 30, 1916 (page 459), was published an article describing the work of Dr. James Shearer at a casualty clearing station in France on a new method of electric delineation of the internal organs of the body. This method, which utilizes the electricity of the body, suggests a combination of wireless telegraphy and electric photography, yet, in reality, it has no relation to either of these. Indeed, it succeeds at exactly the point where x-ray photography fails, in that it enables the production of pictures of soft organs and other structures far within the surface of the body. In these pictures general outlines are exceedingly clear, but no details are visible.

What the work seems to do in its present stage is to enable it to be stated, without any manual or other examination, whether the more important viscera of a living patient—such as the

liver, the kidneys, the spleen, and the brain—are intact so far as their gross anatomy is concerned, while at the same time it supplies evidence of any departure from the normal, in the nature of a considerable enlargement or diminution in size, or an effusion of blood, or the presence of a foreign body, or the existence of a tear or cut of the visceral surface.

The inventor states his belief that the results are primarily due to the interposition between two alternating electric fields of equal strength, and at the precise point where these fields meet, a third electric field, whose facultative potential force is thus released, and becomes convertible into dynamic power. This released circuit operates a recording needle, which maps out on a revolving cylinder a pattern varying with the shape of the organ which furnishes the circuit. The appliances employed are two electric batteries of precisely equal strength, whose current alternations can be produced and varied at will. Two electrodes are arranged for application to the patient's body, each connected with a perforated zinc plate or a zinc wire screen. One of these screens stands vertically on a movable pedestal. The other is held in the air by wire supports and is movable in a horizontal position four or five feet above the center of the first screen (screen A). Any electric field emanating from screen A is, therefore, always at right angles to that of screen B, the currents supplying these fields being derived from the two batteries, with their alternating interruptors. From one of the electrodes a wire is led to a revolving drum resembling a barograph, over which is suspended a needle hammer capable of lateral as well as vertical motion. The drum cylinder carries a rolled sheet of paper coated with paraffine, on which the outline of the organ is to be recorded. The needle hammer is connected with a carbon diaphragm like that of a telephone, which, in its turn, is operated by a current detector, capable, not only of picking up and measuring, but also of concentrating currents too small to be convertible into force by any other means. The method of operation of this apparatus is described in the original article as follows:

"The first step is to place the patient in the right position in relation to the two screens. He must be quite close and head on to the vertical screen A, and the organ to be examined must be directly under screen B, though at a considerable distance from it, and at the same time present the desired plane towards screen A.

"The right position having been secured, the following steps are taken: (1) An intact wax sheet is put upon the recording cylinder; (2) the rate at which the cylinder shall revolve is determined; (3) the appliance which regulates the rapidity of the alterations is adjusted; (4) the currents from batteries A and B are simultaneously released, with the immediate result that the recording cylinder begins to revolve while the hammer needle moves across it steadily, giving rise at each stroke to a slight click. This movement of the needle is allowed to continue until it has twice traversed the cylinder from end to end, and the currents are then cut off.

"What has happened in the mean time is that the current from battery A has reached the electrode A, and has thence been projected horizontally from all parts of screen A as an electric field. The same thing has happened in regard to the current from battery B, but the direction of the field projecting from screen B has been vertically downwards.

"What has also happened is that the two fields have met at right angles, and as they are of precisely equal strength, and are synchronized in respect of alternations, it might be expected that they would have precisely neutralized one another, and that consequently no exhibition of dynamic force would be obtainable from them.

"But in practice this is not what occurs. On the contrary, provided that the body under examination is that of a living person (or is one in which merely somatic, not cellular, death has occurred), an effective current from below always manages to reach electrode B, and thence passes to the detector.

"The result, therefore, has been that the hammer needle mentioned has been put into operation and has tapped out on the revolving wax sheet below it a diagram which precisely resembles the outline of the living tissues lying vertically below screen B.

"This diagram can be discerned forthwith by holding the wax film against a strong light, and can be converted into an ordinary photograph by processes of a type quite familiar in various applied arts."

The inventor's view of this process involves the supposition that every organ in the body constitutes and originates a separate electric field, and that the facultative, dynamic power of this field, and also its shape, varies precisely with the constitution and shape of each organ.

"The explanation here given may be insufficient to account for all the results, or even to be in direct conflict with accepted views concerning body electricity. But, after all, very little is at present known concerning organic tissues as a source of electrical force, and in any case the fact remains that it is on this theory that the

inventor and the originator of the process has worked out his discovery and is at present endeavoring to perfect it in respect of mechanical details.

"While the greater part of the process has been developed by constructing a novel theory and converting it into a practice, a good many of the results so far obtained are due to experiment. It has been found, for instance, that the appliances must be tuned for different organs and different tissues.

"In other words, the rate of alternations in the currents, and therefore the force of each electrical impulsive, must be varied according to the rate of vibration of the tissue molecules. Thus the electrical force residing in blood is very small; so, when blood vessels are to be delineated, the alternations must be very rapid. Contrarywise, since the electric force residing in heart muscle is great, the alternations must be slow when a heart is to be delineated."

The practical value of this peculiar and brilliant discovery promises to be considerable. Further report on the employment is announced to appear in an early issue of the *British Medical Journal*. If experience bears out early expectations, this discovery should open a new field of diagnosis, which may prove applicable in many diverse conditions, not only surgical but medical.

It is of interest that the discoverer of this new method, a Scotsman by birth, obtained his medical education in the United States, receiving the degrees of M.D. and Ch.M. at the University of Washington in 1907. At the outbreak of the European War he entered the British Army Medical Corps as a sergeant. His special electrical knowledge, however, and the use which he made of it in the development of his invention, led speedily to the recognition of his ability, and he has recently been commissioned as a captain.

#### PREVENTION AND RELIEF OF HEART DISEASE.

IN the weekly bulletin of the New York Health Department for November 11, 1916, is published a preliminary account of the work of the committee of this department for the prevention and relief of heart disease. A program has been outlined by this committee dealing with the provision of suitable occupation for cardiac patients, the organization of cardiac classes, the increase of opportunity for cardiac patients in convalescent institutions, and the

provision of permanent institutional care for cardiac patients with permanently broken compensation and little or no prospect of future restoration. In addition, it is hoped that a way may be found to keep all public playgrounds open for the entire year. In comment upon this work the bulletin says:

The Committee's program is of special interest now that public attention is focused on the after-care of poliomyelitis. For the latter, as our readers know, funds have been forthcoming from many different sources. As a matter of fact, the problem presented by the proper care of cardiac cases is the more important of the two. It is estimated that there are about 20,000 children alone suffering from heart disease and requiring systematic care. In a number of ways the two groups need similar provision for relief. Thus both groups should be under constant social and medical supervision; the members of both groups should be fitted for occupations suited to their infirmity; some of the children in both groups need to be taken to school in conveyances. Altogether, it would seem likely that a similar plan of procedure would be developed, especially that a way be found to coordinate the work of existing agencies to the fullest extent.

As one of the many phases of disease prevention and control, the work of this New York committee deserves the interested attention of the profession to the possibilities of its accomplishment.

#### PROGRESS OF POLIOMYELITIS.

DURING the past week the epidemic of poliomyelitis in Massachusetts has continued to decline. During the first seventeen days of November, 139 cases were reported, giving a total of 1854 since the beginning of the year.

On November 11 the Massachusetts State Department of Health announced that, in conjunction with the Harvard Infantile Paralysis Commission, it purposes to open a clinic in Boston for the after-care of recovered cases of poliomyelitis. The complete statement issued is as follows:

"As previously announced, the Governor and Council gave the State Department of Health \$5000 from the contingent fund with which to inaugurate a system of after-care of patients suffering from infantile paralysis. This year there have been in the State more than 1700

cases of this disease, a figure much in excess of any previous years. Of the non-fatal cases a considerable majority will suffer a varying amount of permanent defect. With proper treatment the amount of defect may be reduced and, in some cases, wholly avoided.

"Because of the hitherto comparatively infrequent occurrence of this disease, experience in the treatment of the disease has been limited.

"For this reason it seems desirable to offer opportunity for all patients to receive the most skilful treatment possible. To this end the State Department of Health has joined with the Harvard Infantile Paralysis Commission in providing a series of clinics to be located in Boston and at points outside the Metropolitan area where physicians may bring their patients for consultation and advice as to treatment. Patients will be received only with the consent of the attending physician.

"The work of the clinics will be under the supervision of the Harvard Infantile Paralysis Commission, with skilled surgeons in attendance at the clinics, together with nurses especially trained for the work, to assist at the clinics, to care for the follow-up work in the homes and to instruct patients and their parents as to exercise and treatment advised. Where physicians are unable to accompany their patients to the clinic, the suggestions will be communicated to them by letter.

"The members of the commission are Roger Pierce; Dr. F. W. Peabody, who is interested in the care of acute cases; Dr. R. W. Lovett, who is particularly interested in the after-care of infantile paralysis; and Dr. M. J. Rosenau, who is especially interested in the study of the disease and research problems.

"The Boston clinic will probably open on November 23 at the Children's Hospital. The hour and place, as well as the time and location of the clinics outside of Boston, will be announced later."

#### MEDICAL NOTES.

LONDON DEATH RATES IN SEPTEMBER.—Statistics recently published show that the total death rate of London in September, 1916, was only 12 per thousand inhabitants living. Among the several districts and boroughs the highest rate was 16.6 in Poplar, a populous East Side slum, and the lowest was 6.7, in the central region of the city.

AMERICAN ELECTRIC-THERAPEUTIC ASSOCIATION.—At the recent annual meeting of the American Electro-Therapeutic Association the following officers were elected for the ensuing year:

President, Dr. J. Willard Travell, New York.  
Vice-Presidents, Dr. William Martin, Atlantic City, N. J.; Dr. Frank B. Granger, Boston; Dr. Frank E. Peckham, Providence, R. I.; Dr. William L. Clark, Philadelphia; Dr. A. B. Hirsh, Philadelphia.  
Treasurer, Dr. Emil Heuel, New York.  
Secretary, Dr. Byron S. Price, New York.  
Registrar, Dr. Frederick M. Law, New York.

**NATIONAL BOARD OF MEDICAL EXAMINERS.**—The National Board of Medical Examiners held its first examination at Washington, D. C., on October 16-21. There were thirty-two applicants representing twenty-four medical schools from seventeen states. Of these, sixteen candidates were accepted as having the necessary preliminary and medical qualifications. Ten of these took the examination and five passed. The second examination will be held at Washington in June, 1917. Further information may be obtained from the secretary of the board, Dr. J. F. Rodman, 2106 Walnut Street, Philadelphia.

**UNIVERSITY OF CHICAGO MEDICAL SCHOOL.**—Report from New York on November 10 states that the General Education Board, in cooperation with the Rockefeller Foundation, has appropriated the sum of \$2,000,000 for the establishment of a medical school at the University of Chicago. The University itself is to appropriate the same amount and to furnish a site of land valued at \$500,000. An additional sum of \$3,500,000 is to be raised which, with funds already in hand, will furnish an initial endowment of \$8,000,000. On November 14 it was announced that Mr. Julius Rosenwald of Chicago, one of the trustees of the University, had given \$500,000 towards this endowment fund.

#### EUROPEAN WAR NOTES.

**VICTORIA CROSS FOR BRITISH SURGEONS.**—In the issue of the *Lancet* for October 28, announcement is made of the recent award of the Victoria Cross to two British surgeons. The first award is to Dr. William Barnsley Allen, M.C., R.A.M.C., a medical graduate of Sheffield University, "for most conspicuous bravery and devotion to duty. When gun detachments were unloading H. E. ammunition from wagons which had just come up, the enemy suddenly began to shell the battery position. The first shell fell on one of the limbers, exploded the ammunition and caused several casualties. Captain Allen saw the occurrence and at once, with utter disregard of danger, ran straight across the open, under heavy shell-fire, commenced dressing the wounded, and undoubtedly by his promptness saved many of them from bleeding to death. He was himself hit four times during the first hour by pieces of shells, one of which fractured two of his ribs, but he never even mentioned this at the time, and coolly went on

with his work till the last man was dressed and safely removed. He then went over to another battery and tended a wounded officer. It was only when this was done that he returned to his dugout and reported his own injury."

The second award was to Dr. Noel Godfrey Chavasse, M.C., R.A.M.C., a medical graduate of Oxford, "for most conspicuous bravery and devotion to duty. During an attack he tended the wounded in the open all day, under heavy fire, frequently in view of the enemy. During the ensuing night he searched for wounded on the ground in front of the enemy's lines, for four hours. Next day he took one stretcher-bearer to the advanced trenches, and under heavy shell-fire carried an urgent case for 500 yards into safety, being wounded in the side by a shell splinter during the journey. The same night he took up a party of 20 volunteers, rescued three wounded men from a shell-hole 25 yards from the enemy's trench, buried the bodies of two officers, and collected many identity discs, although fired on by bombs and machine-guns. Altogether he saved the lives of some 20 badly wounded men, besides the ordinary cases which passed through his hands. His courage and self-sacrifice were beyond praise."

**A GERMAN UNDERGROUND HOSPITAL.**—A recent issue of the *Medical Press and Circular* quotes from the *London Morning Post* the following account by a British surgeon of a German subterranean hospital at Thiepval, captured during the recent British advance. At first the medical staff of the hospital succeeded in removing all its patients to a place of safety. Later, the surgeon-in-chief and his colleagues were captured and brought back to their former hospital as prisoners.

"The hospital lay two storeys below the ruins of Thiepval—a wide, clean room, lit by candles and small hand-lamps, with every imaginable requisite of a field dressing station at hand. There were drugs unobtainable in England; anti-tetanus and other serums in plenty, oxygen, piles of fresh dressings, surgical instruments neatly arranged beside an operating table—everything except a pair of scissors!"

"Throughout the first night of the British occupation this surgeon worked in the theatre so thoughtfully provided by his enemies. At dawn there was a slight commotion outside. Down a gap leading to the entrance of the hospital dug-out came a German army surgeon, followed by his full staff of twenty orderlies and dressers, pointing to their Red Cross armlets and calling out 'Kamerad!' With the precision of a pre-arranged relief the German staff 'carried on.' A wounded British officer near by was taken in hand by the Württenberger surgeon, who returned to his lamp-lit surgery and began dressing injuries with skilful speed. He was a valuable assistant, and his British colleague pays this tribute to his work."

THE PLIGHT OF POLAND.—Throughout the Kingdom of Poland there is a ratio of 240 deaths to 100 births, declares the late Henryk Sienkiewicz, the distinguished author of "Quo Vadis," in a leading article in the *American Red Cross Magazine* for November, entitled "Behold our Poland!"

"The present war has inflicted injuries on nearly all the peoples of Europe," says Mr. Sienkiewicz, "but on none of them have the calamities pressed so heavily—with a weight as intolerable—as on the Poles, a people of twenty-odd millions, divided between Russia, Austria, and Prussia.

"Belgium and Serbia were devastated by sword and fire, but the storm which passed over these two countries was of short duration, and the Belgian and Serbian soldiers had, at least, the consoling thought that they were giving their lives 'for altars and firesides' in defending their own liberties and their own rights. To the Poles such a consolation was denied. Nearly two millions of Polish soldiers have been drafted in three armies, and in consequence have been forced into a fratricidal struggle.

"Even if Polish territory had not become the theatre of war, this fact alone would constitute a crown of misfortune. But it is precisely on our territory that the struggles have been the most intense, where they have endured the longest, and are again to be renewed. To prevent the rationing of belligerents, the villages and towns have been burned, crops in the granaries and in the fields destroyed, and cattle driven off. They have razed the factories, and those which are standing have been forced to suspend operation in default of raw material and because their machinery has been taken away. As an inevitable consequence of desolation, famine and epidemic prevail throughout Poland.

"In addition to cholera and typhus fever, which, in certain districts, notably in Galicia, are decimating the population, a new malady has made its appearance in our country—the terrible malady of hunger—whose symptoms preceding death are the bloating of the body and blindness. Dr. Strauss, of the German Government, has given a precise description of this malady in the *Zeitschrift für ärztliche Fortbildung*. Throughout the Kingdom of Poland the satisticians report a ratio of 240 deaths to 100 births. When the Russians in retreat, pressed by the Germans, took along with them the civil population inhabiting the right bank of the Vistula River, a majority of the children died of hunger, fatigue, and malnutrition. The same happened in the concentration camps of Austria and Prussia.

"For remedying, even in part, this horrible situation, a 'General Aid Committee for the Victims of the War in Poland' was constituted in Vevey, Switzerland, January 9, 1915, under my direction and under that of M. Pader-

ewski. This committee addressed to all civilized people an appeal, signed by myself, asking, in the name of the State of Poland, in view of its merits as a Christian bulwark against the barbaric hordes, as well as its achievements in the domain of science, of art, of progress in general, and of civilization, to succor this people menaced in its very existence.

"Our appeal was not without echo. It was supported by Catholic churches throughout the Christian world. From January 9 to July 1, 1916, we had collected the sum of 12,571,276 francs (\$2,514,253.10), of which amount we had sent, up to the latter date, the sum of 12,137,044 (\$2,427,408) for aiding in Poland the population deprived of shelter and those suffering from hunger without making any distinction between the religions.

"Subsidies in money have been sent to the territories occupied by the Germans and Austrians in Galicia and Lithuania, and to the Poles taken by the Russian Army into Russia; also to those in the concentration camps in Austria. We have obtained in Switzerland authorization to send thirty wagons of condensed milk for the little children. This consignment has been received by the mothers with transports of joy in all the localities of Poland where misery has made itself felt the most. We invariably have sent money, clothing, and provisions destined for Poland to the local committees presided over by Poles of distinction."

Mr. Sienkiewicz declares emphatically that no part of the Polish relief supplies have been requisitioned or confiscated by the belligerents or their armies, and he adds that had one instance of this kind been brought to his attention he would have suspended further consignments of relief stores and dissolved the General Aid Committee for the Victims of the War in Poland.

What the relief agencies have been able to do for the stricken Poles, Mr. Sienkiewicz says, of course, has been woefully inadequate "to alleviate in an efficacious manner the frightful misery which has attacked the millions of our compatriots. Throughout the Polish provinces," he says, "the people, even those with very scanty means for staving off famine, divide what little they have with the poorest of their brethren.

"In America," he continues, "thanks to the devotion and energy of such individuals as M. and Madam Paderewski, Madam Sembrich-Kochanska, Madam Adamowski, and numerous Polish associations, compassion for the tragic fate of our people grows each day more and more, and finds its expression not only in a large material support, but also in the expressions of your most eminent citizens, who raise their voices in defense of our existence and of our right to independence. The noble efforts of President Wilson and Ambassador Gerard definitely to heal the wound of famine in Poland were powerless to vanquish the obstacles which rear themselves in time of war—the selfishness



of the belligerents; but they fill our hearts, nevertheless, with gratitude. We entertain the same sentiments toward your American Red Cross, which several times has forwarded contributions in money and clothing to our committee.

"The fraternal compassion of your country, in which at present takes refuge not only the humane conscience banished from Europe, but also the spirit of Christian charity, fills us with hope and fortifies us in our most bitter hour. The situation of Poland is horrible! However, if the civilized people, jointly and severally answerable to humanity in its entirety, do not cease to regard our cause as they do their own, we will cling fast to the end, and we ourselves will awaken soon, full of force, and ready for a new life in liberty."

**WAR RELIEF FUNDS.**—On November 18 the totals of the principal New England relief funds for the European War reached the following amounts:—

Belgian Fund .....	\$167,447.58
French Wounded Fund .....	142,083.87
Armenian Fund .....	124,251.38
Surgical Dressings Fund .....	57,509.06
Polish Fund .....	47,300.78
LaFayette Fund .....	20,953.53
Russian Refugees' Fund .....	4,917.17

### Massachusetts Medical Society.

#### MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY.

—At the October meeting of the Middlesex South District Medical Society a special committee was appointed with power to call meetings of members for the purpose of informing them in regard to the proposed social insurance laws. The Committee consists of the following members:

Dr. Charles E. Mongan, Somerville, Chairman; Dr. Frank E. Bateman, Somerville; Dr. Frank W. Plummer, Malden; Dr. Felix McGirr, Cambridge; Dr. Henry A. Wood, Waltham; Dr. P. C. Bartlett, Newton Highlands; Dr. Enos H. Bigelow, Framingham. Dr. John F. O'Brien, Charlestown.

This committee has already met with local medical societies in the Middlesex South district and is ready to visit, on request, other societies or groups of medical men who are interested in the above-named legislation. Also, on request, it will furnish references to recent literature on the subject. Application for either of these purposes should be made to the chairman.

#### BOSTON AND NEW ENGLAND.

**WEEK'S DEATH RATE IN BOSTON.**—During the week ending Saturday noon, Nov. 18, 1916, the number of deaths reported was 200 against 203 for the same period last year, with a rate of 13.72 against 14.14 last year. There were 32

deaths under one year of age against 40 last year, and 58 deaths over 60 years of age against 63 last year. The number of cases of principal reportable diseases was: Diphtheria, 38; scarlet fever, 18; measles, 14; whooping cough, 10; typhoid fever, 3; tuberculosis, 30. Included in the above were the following cases of non-residents: Diphtheria, 12; tuberculosis, 3; scarlet fever, 5.

Total deaths from these diseases were: Diphtheria, 4; tuberculosis, 18. Included in the above were the following deaths of non-residents: Diphtheria 1; tuberculosis, 3.

**AFTER-CARE OF INFANTILE PARALYSIS.**—Beginning on December 1, 1916, the Orthopedic Department of the Children's Hospital, Boston, will offer a course in muscle training and in the principles of the nursing after-care of infantile paralysis. This course will be open to a limited number of properly qualified women, and will be an all-day course covering a period of about six weeks, most of the work being in the clinics and practical in character.

The money received will be used for the maintenance of the clinic. Pupils who are not likely to prove satisfactory practical workers will be advised to withdraw early in the course and their fee will be returned to them. The course will be under the general supervision, but not under the actual instruction, of Dr. R. W. Lovett, Surgeon to the Hospital, to whom application for admission should be made at the Hospital.

**JOINT PEDIATRIC MEETING.**—Under the auspices of the New England Pediatric Society there was held in Boston, on November 4, a joint meeting of that society with the Pediatric Society of the New York Academy of Medicine, the New York State Pediatric Society and the New Jersey and Philadelphia Pediatric Societies. Visits were made in the forenoon to the principal pediatric clinics of the city. Luncheon was served at the Harvard Medical School and the afternoon was devoted to a trip to the Massachusetts School for the Feeble-minded at Waltham. Dinner was served at the Harvard Club. At the evening session, held in the Boston Medical Library, the principal addresses were made by Dr. G. Hudson McEwen of Philadelphia, Dr. Fenton B. Turek of New York and Dr. W. G. Smillie of Boston.

**MASSACHUSETTS HOMOEOPATHIC HOSPITAL.**—The 46th annual report of the Massachusetts Homoeopathic Hospital, covering the year ended December 31, 1915, has recently been issued. It records a total number of in-patients treated of 7947, making the total number of in-patients treated since the opening of the hospital in 1871 82,928. This was a gain over the previous year of 382 patients. The contagious department treated 1138 patients, a gain of 300 over the

previous year. The new maternity hospital, dedicated on January 1, 1916, supplies accommodation for 76 patients. The operation of this new building has called for added accommodations for increased hospital staff and nurses, and to meet these needs an adjoining building has been purchased. It is also planned to erect a new building to provide for dining-rooms, kitchen and laundry, as well as all machinery, including lighting plant and storerooms. The space now occupied by these departments will be used for much-needed hospital purposes, and will permit the arrangement of a surgical operating pavilion with amphitheatre and smaller operating rooms.

**ANTI-VACCINATION INQUIRY.**—At a recent meeting of the Boston Homeopathic Society the following resolution, relative to the attitude of members of the Massachusetts General Court on anti-vaccination legislation, was adopted:

"Whereas, certain articles of legislation, vitally affecting the public health, will be presented to the incoming Legislature, and,

"Whereas, we physicians, intrusted as we are, with all that pertains to the public health, therefore be it

"Resolved, That the members of this Society, and all other physicians, be requested to ascertain before election the status of each candidate to the Legislature from his senatorial and representative district, on the anti-vaccination bill and the Pang Sney bill, so called, and that each physician be requested to use his influence against any candidate favoring said legislation."

**HOSPITAL BEQUESTS.**—The will of the late Ellen Bailey, who died at West Roxbury, Mass., on October 24, contains bequests of \$2000 to the Children's Hospital, Boston, and \$1000 to the Dorchester Home for Incurables.

The will of the late Louisa F. Crane of Dalton, Mass., which was filed in probate at Pittsfield, Mass., on November 8, contains bequests of \$15,000 to the House of Mercy Hospital, Pittsfield, and \$5000 to the Perkins Institute for the Blind, Boston.

**MORBIDITY STATISTICS OF BOSTON.**—There has recently been completed in Boston by Dr. Lee K. Frankel and Dr. Louis I. Dublin of the Metropolitan Life Insurance Company, through the work of 300 agents, a canvass of nearly 100,000 inhabitants of Boston, with reference to health and morbidity conditions in this city. This survey, which involved house visits on 20,497 families, representing a total of 97,259 individuals, or about 13% of the estimated population of the city, was presented at the recent convention of the American Public Health Association in Cincinnati.

"In all, 1902 cases of sickness were recorded, this being equivalent to a rate of 19.6 persons

sick in 1000 persons canvassed, or under 2%. The report then states that the rate as a whole is distinctly lower than in the surveys made in other cities; the lowest previous rate being 23.1 per 1000, for Rochester, N. Y. The report adds that the very favorable condition shown for Boston may, in part, be the result of the survey being taken in mid-summer, when low mortality and a small number of respiratory disorders usually prevail. The report says nothing, however, of the infantile paralysis epidemic which prevailed in July, as the survey was made in the two weeks beginning July 17 and 24.

Of the 1902 cases of sickness discovered, 1747, or 91.9%, were disabled for work, and 155, or 8.1%, were reported sick but able to work. This indicates a higher percentage of "unable to work" cases than in other surveys, but the report states that the increase is due to the changes in classification whereby some cases returned with ability to work were formerly classified as "unspecified" are now classified as "unable to work."

Concerning the economic loss from sickness in this city the report states: "The estimated male population of Boston, 15 years and over, in 1916 is 272,219. On the basis of the sickness rate determined by this survey for these ages (21.6 per thousand) we may conclude that there are at least 5880 males in Boston constantly sick and disabled. At 300 working days per year per individual, there is a loss of 1,764,000 working days, or 6.5 working days per individual.

This average of time lost for sickness and accident in the general community may be compared with 7.6 days in North Carolina and 7 days in Rochester, N. Y.

"The latest available figures for males of working age in the local sick benefit societies of Germany, namely, for the year 1913 (the year before the war began), shows an average of 8.8 days of disability for work per year.

"In like manner, the 286,081 females of working age may be expected to give a total of 6237 persons constantly sick, which, at 300 working days per year per individual, gives a total loss of 1,871,100 working days, or an average of 6.5 days per individual per year. The corresponding figure for the Rochester survey was 7.7 days; for North Carolina, 10.2, and for the latest German Sickness Society experiences, 9.8 days."

The report also states that the principal diseases responsible for the sickness registered were rheumatism, organic disease of the heart, tuberculosis of the lungs, diseases of the kidneys, and diseases and conditions of the puerperal state.

It also states: "The proportion of cases of sick less than one month up to the date of the survey was only 26.3% of the total. This was slightly higher than the finding for Rochester,

N. Y., but considerably lower than the proportion of cases sick less than one month in North Carolina. The relatively small number of cases of the acute infectious diseases accounted for this condition.

"Of the total cases 72.9% received medical attention; this is a higher percentage than that developed in the preceding surveys. This finding reflects the excellent medical facilities available in the city of Boston. Hospitals and dispensaries provided a large proportion of the total amount of medical care."

The report shows also that among the males 19.9 persons were sick for each 1000 exposed; the figure for females was 19.5 per 1000. Sickness involving disability for work occurred at a rate of 18.1 per 1000; the same rate of sickness was observed for females.

Tuberculosis of the lungs was found in 82 cases, or at the rate of 84.3 per 100,000, and the report states that this is the lowest tuberculosis rate so far discovered in the several surveys. The report adds, "The medical care of tuberculosis cases is apparently well developed in Boston."

According to the report the city of Boston was chosen for the survey "because of its large and representative population, its geographical location and its varied industrial activity. The appointment of a Special Commission on Social Insurance by the Governor of Massachusetts to report on health insurance among other matters, suggested the possibility that our findings for Boston might be especially useful to this body in its studies. Finally, the excellent medical facilities of Boston, including hospitals, dispensaries, a well-developed nursing association and other health and social agencies, confirmed our decision to make our study there. It was hoped that the facts developed by our inquiry might be put to practical use by placing data obtained at the disposal of these institutions."

## Correspondence.

### WORKINGMEN'S COMPENSATION.

November 9, 1916.

Mr. Editor:—

Appropos of the report of the Committee on the Workingmen's Compensation Act in this week's JOURNAL, it may interest the members of the Massachusetts Medical Society to know that, on June 9, 1916, a man testified, under oath, before the Industrial Accident Board, that he was so busy doing surgical work at an industrial plant that he did not have time to make the customary report of accidents to the Industrial Accident Board. When asked why he did not send accident cases to a doctor, he said that he was doing dressings under the direction of the attorney for the company.

This special law violation was brought to the attention of the State Board of Registration in Medicine some six months ago, but evidently the welfare of the workman and the medical profession is of small concern to this Board.

That it is a common occurrence for unauthorized persons to practice surgery and medicine throughout the state is evidenced by the statement of the attorney of the insurance company at the hearing previously alluded to, that trained nurses treated cases for them right along and that they had no complaints. The man above mentioned, by the way, is not a trained nurse.

The "old line" companies are, as a rule, treating the local physicians well, but the mutual companies are resorting to the most unfair methods, both as regards the injured workman and the doctor.

A scheme which the two mutual companies work together is to have a dispensary inconveniently located. When a man is injured, he is directed to go to this place, often miles from the factory where the man is injured. The man usually gets sick of the treatment and the time lost in visiting this dispensary. He goes to his family doctor. If the family doctor tries to collect a fee from the insurance company before the Industrial Accident Board, the insurance attorney will say: "You can't beat Dr. So-and-so"—mentioning a very prominent surgeon,—giving the Board the impression that the insurance companies' cases are treated individually by this surgeon, when, as a matter of fact, the same surgeon does scarcely any of that work at all.

I think that the doctors have had about enough of the so-called state and mutual companies. Instead of furnishing regularly qualified physicians to treat their injured workmen, they have used nurses, social workers, ex-painters—anything to save a few cents—with the result that the afflicted workmen fall back on the family doctor and the doctor cannot collect a cent from the insurance companies because the companies furnish a dispensary to cover the law, or, rather, to evade the law.

It was most fortunate that the Legislature allowed the standard insurance companies to write insurance under the Workingmen's Compensation Act. Physicians would be in a sorry plight today had all this business, as was first intended, been taken over by the state company. I can imagine a chain of cheap dispensaries over the state with a corps of nurses and orderlies, operated from headquarters.

There is great room for improvement in the enforcement of the Medical Practice Act. A great many people think that nerve is more necessary than knowledge and a license to practice medicine in Massachusetts, and I don't know but that it is true.

Very sincerely,

CHARLES MALONE, M.D.

5 Glen Road, Jamaica Plain, Mass.

### AMMONIUM SALICYLATE IN POLIOMYELITIS.

November 10, 1916.

Mr. Editor:—

I have now much corroborative proof that salicylate of ammonium, given in sufficient doses, at the inception of infantile paralysis, is of great practical value. It is, as yet, the simplest, least objectionable remedy offered. It interferes with nothing else that is rational. No doubt Dr. Lovett's admirable work is most desirable when paralysis has occurred; but why not prevent it, or, at least, greatly diminish its severity?

Please read "Grip in Children," *Journal American Medical Association*, Oct. 28, 1916, and discussion which follows, and you will agree with me that there is to be found *not a little* that is illuminating.

Theories of disease are one thing; practice, based upon long and varied experience, is another. I have never seen in grip, or grippie, any drug so valuable as the salicylate of ammonium; and allow me to add, my experience has been neither small nor restricted.

Very truly yours,

BEVERLY ROBINSON, M.D.

New York, 42 West 37th St.

## HARVEY'S JOURNEY TO PADUA.

Mr. Editor:—

The following incidents concerning the life of Harvey are from a most interesting volume entitled "Physic and Physicians: A Medical Sketch Book, Exhibiting the Public and Private Life of the Most Celebrated Men of Former Days, with Memoirs of Eminent Living London Physicians and Surgeons." This work was published anonymously in 1845. It contains much of great interest concerning famous medical men that has not found its way into more formal biographies, and one can see that the writer must have had a vast store of knowledge to draw from. It would be impossible to hold the engaging author to "strict accountability" for all his statements, but they seem to ring true.

"When I was at Padua in 1787," says Dr. Moseley, "I looked for the arms of the great Harvey among the multitude which adorn the public hall of the University, but his were not there. There were several of the English of his standing. It was the custom at Padua for every person who had taken a doctor's degree to have his arms and name hung up in the University when he went away. After such a lapse of time it was not likely that I should obtain any anecdotes concerning him at Padua, but I did not omit to enquire. Among other things on which I could obtain no additional information was the tradition of the extraordinary preservation of his life in the commencement of his journey to Padua, in which there appeared an interposition of something more than human intelligence.

"When Harvey arrived at Dover, with several other young men, in order to embark for the Continent on their way to Italy, they went, with their passports, to Sir Henry Brook, then commanding at Dover Castle. When Harvey presented his passport Sir Henry told him he should not go, but must remain his prisoner. Harvey desired to know the reason and what offence he had committed. The Governor replied that it was his pleasure, and gave him no further satisfaction. In the evening, which was beautifully clear, the packet sailed with Harvey's companions on board. In the night there arose a terrible storm in which the vessel was lost, and all on board perished.

"The next day the melancholy news was brought to Dover. The Governor then explained himself to Harvey, whom he knew only by sight. He told him that on the night before his arrival he had a perfect vision of him in a dream, coming to Dover to cross over to Calais, and that he had a warning to stop him. Great and glorious indeed was the use which Harvey made of a life so miraculously protected!"

Harvey was a great martyr to the gout, and his method of treating himself was as follows: He would sit with his legs bare, even if it were frosty, on the leads of Cochine House, where he lived for some time with his brother Eliab, or put them into a pail of water until he was almost dead with the cold, and then he would betake himself to his stove. He was troubled with insomnia, to cure which he would rise in the night and walk about his chamber in his shirt until he began to shiver, and then he would return to his bed.

Very truly yours,

WILLIAM PEARCE COUES, M.D.

Boston, November 6, 1916.

## APPOINTMENTS.

CORNELL UNIVERSITY.—Dr. Lewis Atterbury Conner, professor of clinical medicine in the Medical College of Cornell University since 1905, has been appointed professor of medicine, in succession to Dr. William Gilman Thompson, who has resigned.

UNIVERSITY OF ILLINOIS.—Dr. Julius H. Hess has been appointed professor of pediatrics and chief of the division of pediatrics in the College of Medicine of the University of Illinois.

UNIVERSITY OF TENNESSEE.—Dr. Frank Maltaner of Cincinnati, Ohio, has been appointed associate professor of bacteriology and public health at the College of Medicine of the University of Tennessee.

HARVARD MEDICAL SCHOOL.—Dr. Leverett D. Bristol, formerly professor of bacteriology and hygiene at the University of North Dakota, has been appointed to the Boston Dispensary Fellowship in public health in the department of preventive medicine at the Harvard Medical School.

UNIVERSITY OF PENNSYLVANIA.—Dr. Joseph McFarland has been appointed professor of pathology; Dr. John C. Helsler, professor of anatomy; Dr. George H. Meeker, professor of chemistry; Dr. Horatio C. Wood, Jr., professor of pharmacology and therapeutics; and Dr. Seneca Egbert, professor of hygiene in the medical faculty in the University of Pennsylvania.

## NOTICE.

HARVEY SOCIETY.—The third lecture in the twelfth series before the Harvey Society will be delivered at the New York Academy of Medicine on Saturday evening, November 25, by Dr. Paul A. Lewis, of the Henry Phipps Institute for Tuberculosis, on "Chemotherapy in Tuberculosis."

## RECENT DEATHS.

DR. STERLING BARROWS, a graduate of the College of Physicians and Surgeons, Columbia University, in 1906, died at his home in Worthington, Mass., August 16, 1916, of tuberculosis. He was a Fellow of the Massachusetts Medical Society.

DR. CHARLES EDWIN STONE died of cardio-renal disease at the Lynn Hospital, November 5, 1916, aged 48 years. He was a graduate of the University of Vermont, College of Medicine, in 1906, and had practiced in Lynn. He was a Fellow of the Massachusetts Medical Society.

DR. PERCY GUY DAVIS died at his home in Deerfield, Mass., Oct. 20, 1916, aged 49 years. He was a graduate of the Baltimore Medical College in 1896, and practiced ophthalmology, with an office in Greenfield, Mass. He joined the Massachusetts Medical Society in 1899.

DR. JONATHAN HENRY WOODS died at his home in Brookline, November 16, aged 65 years. He was born in Barre, Mass., was a graduate of the Long Island College Hospital in 1880, and of the College of Physicians and Surgeons, Columbia University, in 1881. He settled in Brookline, and joined the Massachusetts Medical Society in 1882. He was a member of the American Medical Association. His widow survives him.

## SOCIETY NOTICE.

NORFOLK DISTRICT MEDICAL SOCIETY.—A regular meeting of the Society will be held at Masonic Temple, 171 Warren Street, Roxbury, Tuesday, Nov. 23, at 8 p.m.

Business.

Communication, "Milk and Milk Production," illustrated by stereopticon, Reginald W. Bird, Waveney Farms, Framlingham, Mass.

Discussion opened by W. W. Howell, M.D.

BRADFORD KENT, M.D., Secretary.